

Set	Items	Description
? E	AU=RHEE, JOON- HAENG	

Ref	Items	Index-term
E1	6	AU=RHEE, JOON WHAN
E2	2	AU=RHEE, JOON WON
E3	30	*AU=RHEE, JOON- HAENG
E4	2	AU=RHEE, JOON- SEONG
E5	22	AU=RHEE, JOON- SHI CK
E6	1	AU=RHEE, JOON- SHI K
E7	1	AU=RHEE, JOONG E.
E8	2	AU=RHEE, JOONG EUI
E9	1	AU=RHEE, JOONG GEUN
E10	1	AU=RHEE, JOONG GUEN
E11	1	AU=RHEE, JOONG HYUK
E12	2	AU=RHEE, JOONG EUI

Enter P or PAGE for more

? S E1- E3

6	AU=RHEE, JOON WHAN
2	AU=RHEE, JOON WON
30	AU=RHEE, JOON- HAENG
38	E1- E3

? S S1 AND VI BRI O

38	S1
202760	VI BRI O
24	S1 AND VI BRI O

? RD

>>>Duplicate detection is not supported for File 393.

>>>Duplicate detection is not supported for File 391.

>>>Records from unsupported files will be retained in the RD set.

S3 12 RD (unique items)

? T S3/3, K/1-12

>>>KW C option is not available in file(s): 399

3/3, K/1 (Item 1 from file: 24)
 DI ALOG(R) File 24: CSA Life Sciences Abstracts
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0003522208 IP ACCESSI ON NO: 7041018
 Vibrio vulnificus Vulnibactin, But Not Metalloprotease VvpE, Is
 Essentially Required for Iron-Uptake from Human Holotransferrin

Kim Choon-Mee; Park, Ra-Young; Park, Jeong-Hee; Sun, Hui-Yu; Bai,
 Young-Hoon; Ryu, Phil-Yeol; Kim Soo-Young; Rhee, Joon-Haeng;
 Shin, Sung-Heui
 Research Center for Resistant Cells, Chosun University Medical School;
 Gwangju 501-759, South Korea, [mailto:shsin@chosun.ac.kr]

Biological & Pharmaceutical Bulletin, v 29, n 5, p 911-918, May 2006
 PUBLICATION DATE: 2006

DOCUMENT TYPE: Journal Article
 RECORD TYPE: Abstract
 LANGUAGE: English
 SUMMARY LANGUAGE: English
 ISSN: 0918-6158
 ASFA NO: CS0728831

FILE SEGMENT: Bacteriology Abstracts (Microbiology B)
Vibrio vulnificus Vulnibactin, But Not Metalloprotease VpE, Is
Essentially Required for Iron-Uptake from Human Holotransferrin

... Park, Jeong-Hee; Sun, Hui-Yu; Bai, Young-Hoon; Ryu, Phil-Yeol; Kim
Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

ABSTRACT:

... metalloprotease (VpE) and catechol-siderophore (vulnibactin) in the
uptake of iron from human transferrins by Vibrio vulnificus have been
determined using different experimental conditions and methods. Therefore,
in this study, we...

DESCRIPTORS: Ascites; Complementat ion; Drugs; Growth; Heart; Iron;
Isochorismate synthase; Metalloprotei nase; Mutat ion; Mutat ions;
Repressors; Transferrins; Vibrio vulnificus

3/3, K/2 (Item 2 from file: 24)
DIALOG(R) File 24: CSA Life Sciences Abstracts
(c) 2010 CSA. All rts. reserv.

0003520430 I P ACCESSI ON NO: 6434094
Inactivation of Vibrio vulnificus Hemolysin by Oligomerization but
Not Proteolysis

Shin, Sung-Heui; Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai,
Young-Hoon; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee,
Shee-Eun; Rhee, Joon-Haeng
Research Center for Resistant Cells, Chosun University Medical School

Biological & Pharmaceutical Bulletin, v 28, n 7, 2005
PUBLICATION DATE: 2005

PUBLISHER: Pharmaceutical Society of Japan, 2-12-15, Shibuya Shibuya-ku
Tokyo 150-0002 Japan, [mailto:ronb@pharm.or.jp],
[URL: http://bpb.pharm.or.jp]

DOCUMENT TYPE: Journal Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

ISSN: 0918-6158

FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Inactivation of Vibrio vulnificus Hemolysin by Oligomerization but
Not Proteolysis

... Bai, Young-Hoon; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran;
Lee, Shee-Eun; Rhee, Joon-Haeng

ABSTRACT:

Vibrio vulnificus extracellular protease (VpE) is believed to
destroy its hemolysin (VhA) in the late growth...

DESCRIPTORS: Hemolysins; Oligomerization; Proteinase; Proteolysis;
Western blotting; Vibrio vulnificus

3/3, K/3 (Item 3 from file: 24)
DIALOG(R) File 24: CSA Life Sciences Abstracts
Page 2

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0003158407 IP ACCESSION NO: 7899305

Vibrio vulnificus metalloprotease VvpE is essentially required for swarming

Kim Choon-Mee; Park, Ra-Young; Chun, Ho-Jong; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui
Research Center for Resistant Cells, Chosun University Medical School,
Gwangju, Korea, [mailto:shsin@chosun.ac.kr]

FEMS Microbiology Letters, v 269, n 1, p 170-179, April 2007

PUBLICATION DATE: 2007

PUBLISHER: Elsevier Science, P.O. Box 211

DOCUMENT TYPE: Journal Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

ISSN: 0378-1097

FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Vibrio vulnificus metalloprotease VvpE is essentially required for swarming

Kim Choon-Mee; Park, Ra-Young; Chun, Ho-Jong; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

ABSTRACT:

... by expressions of virulence factors related to invasiveness. In this study, it was determined that *Vibrio vulnificus* swarming was abolished by mutation of the vvpE gene encoding a metalloprotease VvpE and ...

... DESCRIPTORS: Models; Mucosal immunity; Mutation; N-octanoyl homoserine lactone; Swarming; Lactoferrin; quorum sensing; virulence factors; vvpE gene; *Vibrio vulnificus*

3/3, K/4 (Item 1 from file: 393)

DIALOG(R) File 393: Beilstein Database - Abstracts

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Beilstein Abstract Id: 6553384

Title: *Vibrio vulnificus* Vulnibactin, But Not Metalloprotease VvpE, Is Essentially Required for Iron-Uptake from Human Holotransferrin

Document Type: Journal Record Type: Abstract

Author: Kim Choon-Mee; Park, Ra-Young; Park, Jeong-Hee; Sun, Hui-Yu; Bai, Young-Hoon; Ryu, Phil-Yeol; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

Citation: Biol. Pharm. Bull. (2006) Series: 29-5, 911 - 918 CODEN:

BPBLEO Language: English

Abstract Language: English

Title: *Vibrio vulnificus* Vulnibactin, But Not Metalloprotease VvpE, Is Essentially Required for Iron-Uptake from Human Holotransferrin

... Author: Park, Jeong-Hee; Sun, Hui-Yu; Bai, Young-Hoon; Ryu, Phil-Yeol; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

... Abstract: metalloprotease (VvpE) and catechol-siderophore

10585880VI BRI O.txt

(vulnibactin) in the uptake of iron from human transferrins by *Vibrio vulnificus* have been determined using different experimental conditions and methods. Therefore, in this study, we...

Keywords: *Vibrio vulnificus*; metalloprotease; vulnibactin; transferring; iron

3/3, K/5 (Item 2 from file: 393)

DI ALOG(R) File 393: Beilstein Database - Abstracts

(c) 2008 Beilstein GmbH. All rights reserved.

Beilstein Abstract Id: 6505604

Title: Inactivation of *Vibrio vulnificus* hemolysin by oligomerization but not proteolysis

Document Type: Journal Record Type: Abstract

Author: Shin, Sung-Heui; Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai, Young-Hoon; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee, Shee-Eun; Rhee, Joon-Haeng

Citation: Biol. Pharm. Bull. (2005) Series: 28-7, 1294 - 1297 CODEN: BPBLEO Language: English

Abstract Language: English

Title: Inactivation of *Vibrio vulnificus* hemolysin by oligomerization but not proteolysis

... Author: Bai, Young-Hoon; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee, Shee-Eun; Rhee, Joon-Haeng

Abstract: *Vibrio vulnificus* extracellular protease (VpE) is believed to destroy its hemolysin (VhA) in the late growth...

Keywords: Hemolysin; Oligomerization; Protease; *Vibrio vulnificus*

3/3, K/6 (Item 1 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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146224476 CA: 146(12)224476f JOURNAL

X-gal inhibits the swarming of *Vibrio* species

AUTHOR(S): Kim Moon-Young; Park, Ra-Young; Bai, Young-Hoon; Chung, Yoon-Young; Kim Choon-Mee; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

LOCATION: Research Center for Resistant Cells, Chosun University Medical School, Gwangju, 501-759, S. Korea

JOURNAL: J. Microbiol. Methods (Journal of Microbiological Methods)

DATE: 2006 VOLUME: 66 NUMBER: 3 PAGES: 552-555 CODEN: JMDQ ISSN: 0167-7012 PUBLISHER ITEM IDENTIFIER: 0167-7012(06)00018-2 LANGUAGE: English PUBLISHER: Elsevier B.V.

3/3, K/7 (Item 2 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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146077702 CA: 146(5)77702w JOURNAL

Swarming differentiation of *Vibrio vulnificus* downregulates the expression of the vvhBA hemolysin gene via the LuxS quorum-sensing system

AUTHOR(S): Kim Moon-Young; Park, Ra-Young; Choi, M-Hwa; Sun, Hui-Yu; Kim Choon-Mee; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

LOCATION: Research Center for Resistant Cells, Chosun University Medical School, Gwangju, 501-759, S. Korea

JOURNAL: J. Microbiol. (Seoul, Repub. Korea) (Journal of Microbiology (Seoul, Republic of Korea)) DATE: 2006 VOLUME: 44 NUMBER: 2 PAGES:

226-232 CODEN: JOM FG ISSN: 1225-8873 LANGUAGE: English PUBLISHER:
Microbiological Society of Korea

3/3, K/8 (Item 3 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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145203874 CA: 145(11)203874y JOURNAL

Effect of the crp mutation on the utilization of transferrin-bound iron
by *Vibrio vulnificus*

AUTHOR(S): Choi, M-Hwa; Sun, Hui-Yu; Park, Ra-Young; Kim Choon-Mee;
Bai, Young-Hoon; Kim Young-Ran; Rhee, Joon-Haeng; Shin, Sung-Heui

LOCATION: Research Center for Resistant Cells, Chosun University Medical
School, Gwangju, S. Korea

JOURNAL: FEMS Microbiol. Lett. (FEMS Microbiology Letters) DATE: 2006

VOLUME: 257 NUMBER: 2 PAGES: 285-292 CODEN: FMLED7 ISSN: 0378-1097

LANGUAGE: English PUBLISHER: Blackwell Publishing Ltd.

3/3, K/9 (Item 4 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

(c) 2010 American Chemical Society. All rts. reserv.

145060561 CA: 145(4)60561f JOURNAL

Suppression and inactivation of *Vibrio vulnificus* hemolysin in cirrhotic
ascites, a human ex vivo experimental system

AUTHOR(S): Choi, M-Hwa; Park, Ra-Young; Sun, Hui-Yu; Kim Choon-Mee;
Bai, Young-Hoon; Lee, Shee-Eun; Kim Soo-Young; Kim Young-Ran; Rhee,
Joon-Haeng; Shin, Sung-Heui

LOCATION: Research Center for Resistant cells, Chosun University Medical
School, Gwangju, S. Korea

JOURNAL: FEMS Immunol. Med. Microbiol. (FEMS Immunology and Medical
Microbiology) DATE: 2006 VOLUME: 47 NUMBER: 2 PAGES: 226-232 CODEN:

FIM EV ISSN: 0928-8244 LANGUAGE: English PUBLISHER: Blackwell Publishing
Ltd.

3/3, K/10 (Item 5 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

(c) 2010 American Chemical Society. All rts. reserv.

143244771 CA: 143(14)244771q JOURNAL

Vibrio vulnificus metalloprotease VvpE has no direct effect on the
iron-assimilation from human holotransferrin

AUTHOR(S): Shin, Sung-Heui; Sun, Hui-Yu; Park, Ra-Young; Kim Choon-Mee;
Kim Soo-Young; Rhee, Joon-Haeng

LOCATION: Research Center for Resistant Cells, Department of Microbiology
, Chosun University Medical School, Gwangju, 501-759, S. Korea

JOURNAL: FEMS Microbiol. Lett. (FEMS Microbiology Letters) DATE: 2005

VOLUME: 247 NUMBER: 2 PAGES: 221-229 CODEN: FMLED7 ISSN: 0378-1097

PUBLISHER ITEM IDENTIFIER: 0378-1097(05)00297-1 LANGUAGE: English

PUBLISHER: Elsevier B. V.

3/3, K/11 (Item 6 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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138283805 CA: 138(19)283805v JOURNAL

Effect of salinity, temperature, and glucose on the production of *Vibrio*
vulnificus hemolysin

AUTHOR(S): Kim Hyun-Soo; Shin, Sung-Heui; Park, Hae-Ryoung; Lee,

10585880VI BRI O.txt

Shee-Eun; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee, Hyun-Chul;
Chung, Sun-Sik; Rhee, Joon-Haeng
LOCATION: Department of Microbiology, Chonnam National University Medical
School, Kwangju, 501-746, S. Korea
JOURNAL: J. Bacteriol. Virol. (Journal of Bacteriology and Virology)
DATE: 2002 VOLUME: 32 NUMBER: 4 PAGES: 355-365 CODEN: JBVOAH ISSN:
1598-2467 LANGUAGE: English PUBLISHER: Journal of Bacteriology and
Virology

3/3, K/12 (Item 7 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
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123006941 CA: 123(1)6941n JOURNAL
A study on the pathogenetic activity of the protease and hemolysin
produced by *Vibrio vulnificus*. I. Biological properties of the hemolysin
produced by *Vibrio vulnificus*
AUTHOR(S): Rhee, Joon-Haeng; Lee, Shee-Eun; Kwon, Hyung-Cheol; Chang,
Heung-Shik; Ryu, Phil-Youl; Chung, Sun-Sik
LOCATION: Medical School, Chonnam National University, Kwangju, 501-190,
S. Korea
JOURNAL: Taehan Msaengmul Hakhoechi DATE: 1994 VOLUME: 29 NUMBER: 5
PAGES: 381-98 CODEN: TMHCDX ISSN: 0253-3162 LANGUAGE: Korean
? E AU=LEE, SHEE-EUN

Ref	Items	Index-term
E1	52	AU=LEE, SHEE EUN
E2	2	AU=LEE, SHEE-CHI N
E3	10	*AU=LEE, SHEE- EUN
E4	1	AU=LEE, SHEE- NA
E5	3	AU=LEE, SHEE- YONG
E6	2	AU=LEE, SHEEN WOO
E7	2	AU=LEE, SHEEN- JE
E8	1	AU=LEE, SHEEN- MOK
E9	11	AU=LEE, SHEEN- WOO
E10	22	AU=LEE, SHEENA
E11	2	AU=LEE, SHEENA R.
E12	14	AU=LEE, SHEEYONG

Enter P or PAGE for more

? S E1- E3
52 AU=LEE, SHEE EUN
2 AU=LEE, SHEE- CHI N
10 AU=LEE, SHEE- EUN
S4 64 E1- E3
? S S4 AND VI BRI O
64 S4
202760 VI BRI O
S5 46 S4 AND VI BRI O
? RD

>>>Duplicate detection is not supported for File 393.

>>>Duplicate detection is not supported for File 391.

>>>Records from unsupported files will be retained in the RD set.

S6 31 RD (unique items)
? DS

Set	Items	Description
S1	38	E1- E3
S2	24	S1 AND VI BRI O

S3 12 RD (unique items)
 S4 64 E1- E3
 S5 46 S4 AND VI BRI O
 S6 31 RD (unique items)

? T S6/3, K/1-31

>>>KW C option is not available in file(s): 399

6/3, K/1 (Item 1 from file: 24)
 DI ALOG(R) File 24: CSA Life Sciences Abstracts
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0004150573 IP ACCESSI ON NO: 12931818
 Crystal structure of the transcriptional activator HlyU from *Vibrio vulnificus* QMCP6

Nishi, Kosuke; Lee, Hyun-Ju; Park, Suk-Youl; Bae, Soo Jang; Lee, Shee Eun; Adams, Paul D; Rhee, Joon Haeng; Kim Jeong-Sun
 Department of Chemistry, Chonnam National University, Gwangju 500-757, Republic of Korea

FEBS Letters, v 584, n 6, p 1097-1102, March 19, 2010
 PUBLI CATION DATE: 2010

PUBLI SHER: El sevier Science, P. O. Box 211 Amsterdam 1000 AE Net herlands

DOCUMENT TYPE: Journal Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

ISSN: 0014-5793

FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Crystal structure of the transcriptional activator HlyU from *Vibrio vulnificus* QMCP6

Nishi, Kosuke; Lee, Hyun-Ju; Park, Suk-Youl; Bae, Soo Jang; Lee, Shee Eun; Adams, Paul D; Rhee, Joon Haeng; Kim Jeong-Sun

ABSTRACT:

... a transcription factor of the ArsR/SmtB family and activates the expression of the pathogenic *Vibrio vulnificus* RTX toxin. In contrast to the other metal-responsive ArsR/SmtB proteins, HlyU does...

DESCR IPTORS: Crystal structure; Ions; Metals; Toxins; Transcription factors; X-ray crystallography; protein families; *Vibrio vulnificus*

6/3, K/2 (Item 2 from file: 24)
 DI ALOG(R) File 24: CSA Life Sciences Abstracts
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0004077919 IP ACCESSI ON NO: 12491839
 RtxA1-Induced Expression of the Small GTPase Rac2 Plays a Key Role in the Pathogenicity of *Vibrio vulnificus*

Chung, Kyoung-Jin; Cho, Eun-Jin; Kim M Kwang; Kim Young Ran; Kim Seok-Ho; Yang, Hee-Young; Chung, Ki-Chul; Lee, Shee Eun; Rhee, Joon Haeng; Choy, Hyon E; Lee, Tae-Hoon
 School of Dentistry, Dental Science Research Institute, The 2nd Stage of Brain Korea 21 for the Dental School, and School of Biological Sciences and Technology, Chonnam National University, and Research Institute for *Vibrio vulnificus* Infections and Clinical Vaccine Research and Development Center

10585880VI.BRI.O.txt

and Department of Microbiology and Genome Research Center for Enteropathogenic Bacteria, Chonnam National University Medical School, Gwangju, and Department of Oriental Medicine Materials, Dongshin University, Naju, Jeonnam Republic of Korea, [mailto:thlee83@chonnam.ac.kr]

Journal of Infectious Diseases, v 201, n 1, p 97-105, 20100000
PUBLICATION DATE: 2010

PUBLISHER: University of Chicago Press, P.O. Box 37005 Chicago IL 60637 USA, [mailto:help@press.uchicago.edu],
[URL: http://www.journals.uchicago.edu/]

DOCUMENT TYPE: Journal Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

ISSN: 0022-1899

FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

... Induced Expression of the Small GTPase Rac2 Plays a Key Role in the Pathogenicity of *Vibrio vulnificus*

... Kim, M Kwang; Kim, Young Ran; Kim, Seok-Ho; Yang, Hee-Young; Chung, Ki-Chul; Lee, Shee Eun; Rhee, Joon Haeng; Choy, Hyon E; Lee, Tae-Hoon

ABSTRACT:

Infection with the human pathogen *Vibrio vulnificus* leads to the generation of reactive oxygen species (ROS) via NAD(P)H oxidase...

... DESCRIPTORS: Infection; Intestine; NAD(P)H oxidase; Pathogenicity; Pathogens; Rac2 protein; Reactive oxygen species; virulence factors; *Vibrio vulnificus*

6/3, K/3 (Item 3 from file: 24)
DIALOG(R) File 24: CSA Life Sciences Abstracts
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0003520430 IP ACCESSION NO: 6434094
Inactivation of *Vibrio vulnificus* Hemolysin by Dimerization but Not Proteolysis

Shin, Sung-Heui; Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai, Young-Hoon; Kim, Choon-Mee; Kim, Soo-Young; Kim, Young-Ran; Lee, Shee-Eun; Rhee, Joon-Haeng
Research Center for Resistant Cells, Chosun University Medical School

Biological & Pharmaceutical Bulletin, v 28, n 7, 2005
PUBLICATION DATE: 2005

PUBLISHER: Pharmaceutical Society of Japan, 2-12-15, Shibuya Shibuya-ku Tokyo 150-0002 Japan, [mailto:ronb@pharm.or.jp],
[URL: http://bpb.pharm.or.jp]

DOCUMENT TYPE: Journal Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

ISSN: 0918-6158

FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Inactivation of *Vibrio vulnificus* Hemolysin by Dimerization but Not Proteolysis

... Park, Ra-Young; Bai, Young-Hoon; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee, Shee-Eun; Rhee, Joon-Haeng

ABSTRACT:

Vibrio vulnificus extracellular protease (VpE) is believed to destroy its hemolysin (VhA) in the late growth...

DESCRIPTORS: Hemolysins; Dimerization; Proteinase; Proteolysis; Western blotting; *Vibrio vulnificus*

6/3, K/4 (Item 4 from file: 24)
DI ALOG(R) File 24: CSA Life Sciences Abstracts
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0002786711 IP ACCESSION NO: 6576963
A Bacterial Flagellin, *Vibrio vulnificus* FlaB, Has a Strong Mucosal Adjuvant Activity To Induce Protective Immunity

Lee, Shee Eun; Kim Soo Young; Jeong, Byung Chul; Kim Young Ran; Bae, Soo Jang; Ahn, Ouk Seon; Lee, Je-Jung; Song, Ho-Chun; Kim Jung Mogg; Choy, Hyon E; Chung, Sun Sik; Kweon, M-Na; Rhee, Joon Haeng
Research Institute of *Vibrio* Infection and Genome Research Center for Enteropathogenic Bacteria, National Research Laboratory of Molecular Microbial Pathogenesis and Department of Microbiology, Chonnam National University Medical School, Gwangju 501-746, South Korea. Department of Dental Pharmacology, Chonnam Dental Research Institute, College of Dentistry, Chonnam National University, Gwangju 500-757, South Korea. Departments of Internal Medicine, Nuclear Medicine, Chonnam National University Hwasun Hospital, 160 Ilsim-ri, Hwasoon, Chonnam 519-809, South Korea. Department of Microbiology, Hanyang University College of Medicine, Seoul 133-791, South Korea. Mucosal Immunology Section, International Vaccine Institute, Seoul 151-818, South Korea

Infection and Immunity, v 74, n 1, p 694-702, January 2006
PUBLICATION DATE: 2006

PUBLISHER: American Society for Microbiology, 1752 N Street N.W.
Washington, DC 20036 USA, [URL: <http://www.asm.org/>]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0019-9567
ELECTRONIC ISSN: 1098-5522
FILE SEGMENT: Immunology Abstracts; Bacteriology Abstracts (Microbiology B)

A Bacterial Flagellin, *Vibrio vulnificus* FlaB, Has a Strong Mucosal Adjuvant Activity To Induce Protective Immunity

Lee, Shee Eun; Kim Soo Young; Jeong, Byung Chul; Kim Young Ran; Bae, Soo Jang; Ahn...

ABSTRACT:

... vaccine development. In this study, we show the highly potent mucosal adjuvant activity of a *Vibrio vulnificus* major flagellin (FlaB).

Using an intranasal immunization mouse model, we observed that coadministration of...

... DESCRIPTORS: Animal models; Interleukin 8; Immunoglobulin G; tetanus toxin; Immunization; Toxoids; Lethal dose; Nose; TLR5 protein; *Vibrio vulnificus*

6/3, K/5 (Item 1 from file: 41)
DIALOG(R) File 41: Pollution Abstracts
(c) 2010 CSA. All rights reserved.

0000300410 IP ACCESSION NO: 7418047
The pyrH Gene of *Vibrio vulnificus* Is an Essential In Vivo Survival Factor

Lee, Shee Eun; Kim, Soo Young; Kim, Choon Mee; Kim, M-Kwang;
Kim, Young Ran; Jeong, Kwangjoon; Ryu, Hwa-Ja; Lee, Youn Suk; Chung,
Sun Sik; Choy, Hyon E; Rhee, Joon Haeng
Clinical Vaccine R&D Center and Genome Research Center for Enteropathogenic
Bacteria, Chonnam Dental Research Institute, Chonnam National University,
Gwangju 501-746, South Korea. Department of Biomedical Sciences and
Research Institute for *Vibrio* Infections, Chonnam National University
Medical School, Gwangju 501-746, South Korea

Infection and Immunity, v 75, n 6, p 2795-2801, June 2007
PUBLICATION DATE: 2007

PUBLISHER: American Society for Microbiology, 1752 N Street N.W
Washington, DC 20036 USA, [URL: <http://www.asm.org/>]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0019-9567
ELECTRONIC ISSN: 1098-5522

The pyrH Gene of *Vibrio vulnificus* Is an Essential In Vivo Survival Factor

Lee, Shee Eun; Kim, Soo Young; Kim, Choon Mee; Kim, M-Kwang;
Kim, Young Ran; Jeong...

ABSTRACT:

We have suggested an important role of the pyrH gene during the infectious process of *Vibrio vulnificus*. Previously, we have identified 12 genes expressed preferentially during human infections by using in...

... DESCRIPTORS: Cytotoxicity; Drug development; Gene deletion; Infection; Lethal dose; Mutation; Phosphorylation; Survival; UMP; Vaccines; survival factor; *Vibrio vulnificus*

6/3, K/6 (Item 1 from file: 98)
DIALOG(R) File 98: General Sci Abs
(c) 2010 The HWWilson Co. All rights reserved.

04265418 H. W WILSON RECORD NUMBER: BGSA00015418
Vibrio vulnificus has the transmembrane transcription activator ToxRS stimulating the expression of the hemolysin gene vvhA.

Lee, Shee Eun

Shin, Sung Heui; Kim, Soo Young

Journal of Bacteriology (J Bacteriol) v. 182 no12 (June 2000) p. 3405-15

SPECIAL FEATURES: bibli ISSN: 0021-9193

LANGUAGE: English

COUNTRY OF PUBLICATION: United States

Vibrio vulnificus has the transmembrane transcription activator ToxRS stimulating the expression of the hemolysin gene vvhA.

Lee, Shee Eun

ABSTRACT: The identification of the Vibrio cholerae transmembrane virulence regulator toxRS (toxRSVc) homologues in V. vulnificus is described. The results revealed...

DESCRIPTORS:

Vibrio vulnificus; Hemolysins; Transcription factors; Bacteria...

6/3, K/7 (Item 2 from file: 98)

DIALOG(R) File 98: General Sci Abs

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04056189 H.W. WILSON RECORD NUMBER: BGSA99056189

Evidence that expression of the Vibrio vulnificus hemolysin gene is dependent on cyclic AMP and cyclic AMP receptor protein.

Bang, Young Bae

Lee, Shee Eun; Rhee, Joon Haeng

Journal of Bacteriology (J Bacteriol) v. 181 no24 (Dec. 1999) p. 7639-42

SPECIAL FEATURES: bibli ISSN: 0021-9193

LANGUAGE: English

COUNTRY OF PUBLICATION: United States

Evidence that expression of the Vibrio vulnificus hemolysin gene is dependent on cyclic AMP and cyclic AMP receptor protein.

Lee, Shee Eun; Rhee, Joon Haeng

ABSTRACT: The molecular mechanism behind the modulation of expression of vvh genes in Vibrio vulnificus was investigated by looking at the nature of the glucose effect on hemolysin synthesis...

DESCRIPTORS:

Vibrio vulnificus; Hemolysins; Adenosine monophosphate; Purinergic receptors

6/3, K/8 (Item 1 from file: 393)

DIALOG(R) File 393: Beilstein Database - Abstracts

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Beilstein Abstract Id: 6505604

Title: Inactivation of Vibrio vulnificus hemolysin by oligomerization but not proteolysis

Document Type: Journal Record Type: Abstract

Author: Shin, Sung-Heui; Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai, Young-Hoon; Kim, Choon-Mee; Kim, Soo-Young; Kim, Young-Ran; Lee, Shee-Eun; Rhee, Joon-Haeng

Citation: Biol. Pharm. Bull. (2005) Series: 28-7, 1294 - 1297 CODEN: BPBLEO Language: English

Abstract Language: English

Title: Inactivation of Vibrio vulnificus hemolysin by oligomerization but not proteolysis

10585880VI BRI O.txt

... Author: Park, Ra-Young; Bai, Young-Hoon; Kim Choon-Mee; Kim
Soo-Young; Kim Young-Ran; Lee, Shee-Eun; Rhee,
Joon-Haeng

Abstract: *Vibrio vulnificus* extracellular protease (VwpE) is
believed to destroy its hemolysin (VwhA) in the late growth...

Keywords: Hemolysin; Oligomerization; Protease; *Vibrio*
vulnificus

6/3, K/9 (Item 1 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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149488000 CA: 149(22)488000c JOURNAL

Vibrio vulnificus RTX toxin kills host cells only after contact of the
bacteria with host cells

AUTHOR(S): Kim Young Ran; Lee, Shee Eun; Kook, Hyun; Yeom Jung A.; Na,
Hee Sam; Kim Soo Young; Chung, Sun Sik; Choy, Hyon E.; Rhee, Joon Haeng

LOCATION: Clinical Vaccine R&D Center, Chonnam National University
Medical School, Gwangju, 501-746, S. Korea

JOURNAL: Cell. Microbiol. (Cellular Microbiology) DATE: 2008 VOLUME: 10

NUMBER: 4 PAGES: 848-862 CODEN: CEMF5 ISSN: 1462-5814 LANGUAGE:

English PUBLISHER: Blackwell Publishing Ltd.

6/3, K/10 (Item 2 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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149329777 CA: 149(15)329777v JOURNAL

Inhibition of Airway Allergic Disease by Co-Administration of Flagellin
with Allergen

AUTHOR(S): Lee, Shee Eun; Koh, Youngil I.; Kim M.-Kwang; Kim Young Ran;
Kim Soo Young; Nam Jong Hee; Choi, Yoo Duk; Bae, Soo Jang; Ko, Young Jong
; Ryu, Hwa-Ja; Koh, Jeong Tae; Choy, Hyon E.; Rhee, Joon Haeng

LOCATION: Clinical Vaccine R&D Center, Chonnam National University,
Gwangju, S. Korea

JOURNAL: J. Clin. Immunol. (Journal of Clinical Immunology) DATE: 2008

VOLUME: 28 NUMBER: 2 PAGES: 157-165 CODEN: JCI MDO ISSN: 0271-9142

LANGUAGE: English PUBLISHER: Springer

6/3, K/11 (Item 3 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

(c) 2010 American Chemical Society. All rts. reserv.

149217060 CA: 149(10)217060z PATENT

Modified flagellin with improved toll-like receptor 5 stimulating
activity

INVENTOR(AUTHOR): Rhee, Joon Haeng; Lee, Shee Eun; Kim Soo Young

LOCATION: S. Korea

ASSIGNEE: Chonnam National University

PATENT: PCT International ; WO 200897016 A1 DATE: 20080814

APPLICATION: WO 2008KR709 (20080205) *KR 13846 (20070209) *KR 11330
(20080204)

PAGES: 35pp. CODEN: PIXXD2 LANGUAGE: English

PATENT CLASSIFICATIONS:

IPC/8 + Level Value Position Status Version Action Source Office:

C07K-0014/255 A I F B 20060101 H KR

DESIGNATED COUNTRIES: AE; AG; AL; AM; AO; AT; AU; AZ; BA; BB; BG; BH; BR;
BW; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DO; DZ; EC; EE; EG; ES;
FI; GB; GD; GE; GH; GM; GT; HN; HR; HU; ID; IL; IN; IS; JP; KE; KG; KM; KN;
KP; KZ; LA; LC; LK; LR; LS; LT; LU; LY; MA; MD; ME; MG; MK; MN; MW; MX; MY;

10585880VI BRI O.txt

MZ; NA; NG; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RS; RU; SC; SD; SE; SG; SK;
SL; SM; SV; SY; TJ; TM; TN; TR; TT; TZ DESIGNATED REGIONAL: AT; BE; BG; CH
; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HR; HU; IE; IS; IT; LT; LU; LV;
MC; MT; NL; NO; PL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN;
GQ; GW; ML; MR; NE; SN; TD; TG; BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL; SZ;
TZ; UG; ZM; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM

6/3, K/12 (Item 4 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

(c) 2010 American Chemical Society. All rts. reserv.

147422950 CA: 147(20)422950q PATENT

Site directed mutagenesis polypeptide essential for in vivo expression of
Vibrio vulnificus, and anti-vibrio live vaccine comprising the same

INVENTOR(AUTHOR): Rhee, Joon Haeng; Lee, Shee Eun; Kim Soo Young; Kim
Choon Mee; Kim Young Ran

LOCATION: S. Korea

ASSIGNEE: Industry Foundation of Chonnam National University

PATENT: Repub. Korean Kongkae Taeho ; KR 20070050206 A DATE: 20070515

APPLICATION: KR 107504 (20051110)

PAGES: No pp. given CODEN: KRXXA7 LANGUAGE: Korean

PATENT CLASSIFICATIONS:

IPC/8 + Level Value Position Status Version Action Source Office:

C12N-0015/63 A I F B 20060101 H CN

C12N-0009/52 A I L B 20060101 H CN

6/3, K/13 (Item 5 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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145349701 CA: 145(18)349701m PATENT

Method for producing recombinant fusion protein by using PAS factor of
Vibrio vulnificus which induces secretion of PAS fusion protein, and
increases production yield of recombinant fusion protein without tag

INVENTOR(AUTHOR): Rhee, Joon Haeng; Kim Soo Young; Kim Young Ran; Lee,
Shee Eun

LOCATION: S. Korea

ASSIGNEE: Chonnam National University

PATENT: Repub. Korean Kongkae Taeho ; KR 20060006204 A DATE: 20060119

APPLICATION: KR 55110 (20040715)

PAGES: No pp. given CODEN: KRXXA7 LANGUAGE: Korean

PATENT CLASSIFICATIONS:

IPC/8 + Level Value Position Status Version Action Source Office:

C12N-0015/31 A I F B 20060101 H KR

C12N-0015/63 A I L B 20060101 H KR

C07K-0014/28 A I L B 20060101 H KR

6/3, K/14 (Item 6 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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145183960 CA: 145(10)183960t JOURNAL

A bacterial flagellin, Vibrio vulnificus FlaB, induces human dendritic
cell maturation

AUTHOR(S): Jeong, Byung Chul; Kim Soo Young; Choi, Bo-Hwa; Park,
Myong-Suk; Lee, Je-Jung; Rhee, Joon Haeng; Lee, Shee Eun

LOCATION: Dep. Dental Pharmacology, Chonnam Dental Res. Inst., Sch.
Dentistry, Chonnam National Univ., Gwangju, 500-757, S. Korea

JOURNAL: J. Bacteriol. Virol. (Journal of Bacteriology and Virology)

DATE: 2005 VOLUME: 35 NUMBER: 3 PAGES: 209-216 CODEN: JBVOAH ISSN:

1598-2467 LANGUAGE: English PUBLISHER: Journal of Bacteriology and Virology

6/3, K/15 (Item 7 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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145060561 CA: 145(4)60561f JOURNAL

Suppression and inactivation of *Vibrio vulnificus* hemolysin in cirrhotic ascites, a human ex vivo experimental system

AUTHOR(S): Choi, M-Hwa; Park, Ra-Young; Sun, Hui-Yu; Kim, Choon-Mee; Bai, Young-Hoon; Lee, Shee-Eun; Kim, Soo-Young; Kim, Young-Ran; Rhee, Joon-Haeng; Shin, Sung-Heui

LOCATION: Research Center for Resistant cells, Chosun University Medical School, Gwangju, S. Korea

JOURNAL: FEMS Immunol. Med. Microbiol. (FEMS Immunology and Medical Microbiology) DATE: 2006 VOLUME: 47 NUMBER: 2 PAGES: 226-232 CODEN: FIM EV ISSN: 0928-8244 LANGUAGE: English PUBLISHER: Blackwell Publishing Ltd.

6/3, K/16 (Item 8 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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144430806 CA: 144(23)430806a JOURNAL

Effect of the heat shock protein 70 on the adjuvanticity induced by a bacterial flagellin of *Vibrio vulnificus*

AUTHOR(S): Lee, Shee Eun; Bae, Soo Jang; Kim, Soo Young; Kim, Young Ran; Rhee, Joon Haeng

LOCATION: Research Institute of *Vibrio* Infection and Genome Research Center for Enteropathogenic Bacteria, Chonnam National University, Gwangju, 501-746, S. Korea

JOURNAL: J. Bacteriol. Virol. (Journal of Bacteriology and Virology)

DATE: 2005 VOLUME: 35 NUMBER: 4 PAGES: 299-305 CODEN: JBVOAH ISSN: 1598-2467 LANGUAGE: Korean PUBLISHER: Journal of Bacteriology and Virology

6/3, K/17 (Item 9 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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143171319 CA: 143(10)171319m PATENT

Mucosal vaccine adjuvants containing bacterial flagellins derived from as an active component *Vibrio vulnificus*, *Salmonella typhimurium* and *Listeria monocytogenes*

INVENTOR(AUTHOR): Rhee, Joon Haeng; Lee, Shee Eun; Kim, Soo Young

LOCATION: S. Korea

ASSIGNEE: Chonnam National University

PATENT: PCT International ; WO 200570455 A1 DATE: 20050804

APPLICATION: WO 2005KR103 (20050112) *KR 1974 (20040112)

PAGES: 21 pp. CODEN: PIXXD2 LANGUAGE: English

PATENT CLASSIFICATIONS:

CLASS: A61K-039/39A

DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ; VC; VN; YU; ZA; ZM; ZW DESIGNATED REGIONAL: BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL; SZ; TZ; UG; ZM; ZW AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT;

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BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IS; IT; LT; LU;
MC; NL; PL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW
ML; MR; NE; SN; TD; TG

6/3, K/18 (Item 10 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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142407502 CA: 142(22)407502y JOURNAL

Essential role of an adenylate cyclase in regulating *Vibrio vulnificus* virulence

AUTHOR(S): Kim Young Ran; Kim Soo Young; Kim Choon Mee; Lee, Shee Eun; Rhee, Joon Haeng

LOCATION: Research Institute of *Vibrio* Infection and Genome Research Center for Enteropathogenic Bacteria, Chonnam National University Medical School, Gwangju, 501-746, S. Korea

JOURNAL: FEMS Microbiol. Lett. (FEMS Microbiology Letters) DATE: 2005

VOLUME: 243 NUMBER: 2 PAGES: 497-503 CODEN: FMLED7 ISSN: 0378-1097

PUBLISHER ITEM IDENTIFIER: 0378-1097(05)00018-2 LANGUAGE: English

PUBLISHER: Elsevier B. V.

6/3, K/19 (Item 11 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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141422172 CA: 141(26)422172p JOURNAL

Production of *Vibrio vulnificus* hemolysin in vivo and its pathogenic significance

AUTHOR(S): Lee, Shee Eun; Ryu, Phil Youl; Kim Soo Young; Kim Young Ran; Koh, Jeong Tae; Kim Ok Joon; Chung, Sun Sik; Choy, Hyon E.; Rhee, Joon Haeng

LOCATION: Department of Dental Pharmacology, Chonnam National University, Gwangju, 500-757, S. Korea

JOURNAL: Biochem Biophys. Res. Commun. (Biochemical and Biophysical Research Communications) DATE: 2004 VOLUME: 324 NUMBER: 1 PAGES: 86-91

CODEN: BBRC A9 ISSN: 0006-291X PUBLISHER ITEM IDENTIFIER: 0006-291X(04)02063-7 LANGUAGE: English PUBLISHER: Elsevier

6/3, K/20 (Item 12 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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139359649 CA: 139(24)359649r JOURNAL

Characterization and pathogenic significance of *Vibrio vulnificus* antigens preferentially expressed in septicemic patients

AUTHOR(S): Kim Young Ran; Lee, Shee Eun; Kim Choon Mee; Kim Soo Young; Shin, Eun Kyoung; Shin, Dong Hyeon; Chung, Sun Sik; Choy, Hyon E.; Progulsk-Fox, Ann; Hillman, Jeffrey D.; Handfield, Martin; Rhee, Joon Haeng

LOCATION: Research Institute of *Vibrio* Infection and Genome Research Center for Enteropathogenic Bacteria, National Research Laboratory of Molecular Microbial Pathogenesis, Kwangju, 501-746, S. Korea

JOURNAL: Infect. Immun. (Infection and Immunity) DATE: 2003 VOLUME: 71

NUMBER: 10 PAGES: 5461-5471 CODEN: INFI B R ISSN: 0019-9567 LANGUAGE:

English PUBLISHER: American Society for Microbiology

6/3, K/21 (Item 13 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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139194163 CA: 139(13)194163n JOURNAL

Regulation of *Vibrio vulnificus* virulence by the LuxS quorum-sensing system

AUTHOR(S): Kim, Soo Young; Lee, Shee Eun; Kim, Young Ran; Kim, Choon Mee; Ryu, Phil Youl; Choy, Hyon E.; Chung, Sun Sik; Rhee, Joon Haeng

LOCATION: National Research Laboratory of Molecular Microbial Pathogenesis, Chonnam National University Medical School, Kwangju, 501-746, S. Korea

JOURNAL: Mol. Microbiol. (Molecular Microbiology) DATE: 2003 VOLUME: 48
NUMBER: 6 PAGES: 1647-1664 CODEN: MOMEE ISSN: 0950-382X LANGUAGE: English
PUBLISHER: Blackwell Publishing Ltd.

6/3, K/22 (Item 14 from file: 399)

DIALOG(R) File 399: CA SEARCH(R)

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138283805 CA: 138(19)283805v JOURNAL

Effect of salinity, temperature, and glucose on the production of *Vibrio vulnificus* hemolysin

AUTHOR(S): Kim, Hyun-Soo; Shin, Sung-Heui; Park, Hae-Ryoung; Lee, Shee-Eun; Kim, Choon-Mee; Kim, Soo-Young; Kim, Young-Ran; Lee, Hyun-Chul; Chung, Sun-Sik; Rhee, Joon-Haeng

LOCATION: Department of Microbiology, Chonnam National University Medical School, Kwangju, 501-746, S. Korea

JOURNAL: J. Bacteriol. Virol. (Journal of Bacteriology and Virology)
DATE: 2002 VOLUME: 32 NUMBER: 4 PAGES: 355-365 CODEN: JBVOAH ISSN: 1598-2467
LANGUAGE: English PUBLISHER: Journal of Bacteriology and Virology

6/3, K/23 (Item 15 from file: 399)

DIALOG(R) File 399: CA SEARCH(R)

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134291379 CA: 134(21)291379s JOURNAL

The cytotoxic effect of *Vibrio vulnificus* hemolysin on the mouse peritoneal macrophages

AUTHOR(S): Im, Ihn Soo; Lee, Shee Eun; Kim, Seol; Bae, M Ok; Rhee, Joon Haeng; Shin, Boo Ahn; Chung, Sun Sik; Ryu, Phil Youl

LOCATION: Dep. Microbiology, Chonnam National Univ. Med. Sch., Kwangju, S. Korea

JOURNAL: Taehan Msaengmul Hakhoechi DATE: 2000 VOLUME: 35 NUMBER: 3
PAGES: 251-261 CODEN: TMHCDX ISSN: 0253-3162 LANGUAGE: Korean
PUBLISHER: Korean Society for Microbiology

6/3, K/24 (Item 16 from file: 399)

DIALOG(R) File 399: CA SEARCH(R)

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133293264 CA: 133(21)293264d JOURNAL

Construction and phenotypic evaluation of a *Vibrio vulnificus* vvpE mutant for elastolytic protease

AUTHOR(S): Jeong, Kwang Cheol; Jeong, Hye Sook; Rhee, Joon Haeng; Lee, Shee Eun; Chung, Sun Sik; Starks, Angela M; Escudero, Gloria M; Gullig, Paul A.; Choi, Sang Ho

LOCATION: Department of Food Science and Technology, Institute of Biotechnology, Chonnam National University, Kwang, 500-757, S. Korea

JOURNAL: Infect. Immun. DATE: 2000 VOLUME: 68 NUMBER: 9 PAGES: 5096-5106
CODEN: INFIBR ISSN: 0019-9567 LANGUAGE: English PUBLISHER: American Society for Microbiology

6/3, K/25 (Item 17 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
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131072522 CA: 131(6)72522t JOURNAL
The role of *Vibrio vulnificus* capsular polysaccharide as a virulence factor
AUTHOR(S): Ryu, Phil Youl; Kim, Won Seok; Lee, Shee Eun; Shin, Boo Ahn; Chung, Sun Sik; Lee, Hyun Chul
LOCATION: Dep. Microbiology, Research Institute Medical Sciences, Chonnam University Medical School, Kwangju, S. Korea
JOURNAL: Taehan Msaengmul Hakhoechi DATE: 1998 VOLUME: 33 NUMBER: 5
PAGES: 425-434 CODEN: TMHODX ISSN: 0253-3162 LANGUAGE: Korean
PUBLISHER: Korean Society for Microbiology

6/3, K/26 (Item 18 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

130219336 CA: 130(17)219336a JOURNAL
Activation of particulate guanylyl cyclase by *Vibrio vulnificus* hemolysin
AUTHOR(S): Kook, Hyun; Rhee, Joon Haeng; Lee, Shee Eun; Kang, Seon Young; Chung, Sun Sik; Cho, Kyung Woo; Baik, Yung Hong
LOCATION: Research Institute of Medical Sciences, Department of Pharmacology, Chonnam University Medical School, Dong-ku, Kwangju, 501-190, S. Korea
JOURNAL: Eur. J. Pharmacol. DATE: 1999 VOLUME: 365 NUMBER: 2/3
PAGES: 267-272 CODEN: EJPHAZ ISSN: 0014-2999
PUBLISHER ITEM IDENTIFIER: 0014-2999(98)00870-X LANGUAGE: English
PUBLISHER: Elsevier Science B.V.

6/3, K/27 (Item 19 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

130033558 CA: 130(4)33558u JOURNAL
Direct identification of *Vibrio vulnificus* in clinical specimens by nested PCR
AUTHOR(S): Lee, Shee Eun; Kim, Soo Young; Kim, Sei Jong; Kim, Hyun Soo; Shin, Jong Hee; Choi, Sang Ho; Chung, Sun Sik; Rhee, Joon Haeng
LOCATION: Department of Microbiology, Institute of Medical Sciences, Chonnam National University, Kwangju, 501-190, S. Korea
JOURNAL: J. Clin. Microbiol. DATE: 1998 VOLUME: 36 NUMBER: 10 PAGES: 2887-2892 CODEN: JCM DW ISSN: 0095-1137 LANGUAGE: English PUBLISHER: American Society for Microbiology

6/3, K/28 (Item 20 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
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126086918 CA: 126(7)86918k JOURNAL
Production of phenolate- and hydroxamate-type siderophores by *Vibrio vulnificus*: their physiological significance for the survival of the bacterium under iron-restricted conditions
AUTHOR(S): Shin, Joon Haeng; Shin, Sung Heui; Yang, Jae Ho; Lee, M Young; Lee, Shee Eun; Chun, Seung Hee; Lim, Yong; Chung, Sun Sik
LOCATION: Dep. Microbiol. Chonnam Natl. Univ. Med. Sch., Kwangju, 501-190, S. Korea

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JOURNAL: Taehan Msaengmul Hakhoechi DATE: 1996 VOLUME: 31 NUMBER: 3
PAGES: 309-319 CODEN: TMHCDX ISSN: 0253-3162 LANGUAGE: English
PUBLISHER: Korean Society for Microbiology

6/3, K/29 (Item 21 from file: 399)

DIALOG(R) File 399: CA SEARCH(R)

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125055111 CA: 125(5)55111s JOURNAL

Vibrio vulnificus hemolysin dilates rat thoracic aorta by activating
guanylate cyclase

AUTHOR(S): Kook, Hyun; Lee, Shee Eun; Baik, Yung Hong; Chung, Sun Sik;
Rhee, Joon Haeng

LOCATION: Department Pharmacology Microbiology, Chonnam University
Medical School, Kwangju, 501-190, S. Korea

JOURNAL: Life Sci. DATE: 1996 VOLUME: 59 NUMBER: 3 PAGES: PL41-PL47

CODEN: LIFSAK ISSN: 0024-3205 LANGUAGE: English

6/3, K/30 (Item 22 from file: 399)

DIALOG(R) File 399: CA SEARCH(R)

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123025248 CA: 123(3)25248h JOURNAL

Evaluation of iron chelators as a therapeutic agent for Vibrio vulnificus
Septicemia - Synergistic Potentiation of the Therapeutic Effect of
Doxycycline on V. vulnificus Septicemia by Calcium Disodium EDTA in Mice

AUTHOR(S): Rhee, Joon Haeng; Lee, Shee Eun; Ha, Bom Seock; Min, Hye Ran;
Chung, Sun Sik

LOCATION: Medical School, Chonnam National University, Kwangju, 501-190, S.
Korea

JOURNAL: Taehan Msaengmul Hakhoechi DATE: 1994 VOLUME: 29 NUMBER: 6

PAGES: 547-64 CODEN: TMHCDX ISSN: 0253-3162 LANGUAGE: Korean

6/3, K/31 (Item 23 from file: 399)

DIALOG(R) File 399: CA SEARCH(R)

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123006941 CA: 123(1)6941n JOURNAL

A study on the pathogenetic activity of the protease and hemolysin
produced by Vibrio vulnificus. I. Biological properties of the hemolysin
produced by Vibrio vulnificus

AUTHOR(S): Rhee, Joon-Haeng; Lee, Shee-Eun; Kwon, Hyung-Cheol; Chang,
Heung-Shik; Ryu, Phil-Youl; Chung, Sun-Sik

LOCATION: Medical School, Chonnam National University, Kwangju, 501-190,
S. Korea

JOURNAL: Taehan Msaengmul Hakhoechi DATE: 1994 VOLUME: 29 NUMBER: 5

PAGES: 381-98 CODEN: TMHCDX ISSN: 0253-3162 LANGUAGE: Korean

? EAU=KIM SOO-YOUNG

Ref	Items	Index-term
E1	228	*EAU=KIM SOO-YOUNG
E2	1	EAU=KIM SOO-YOUNG DAVI D
E3	1	EAU=KIM SOO-YOUNG SUE
E4	1	EAU=KIM SOO-YUL
E5	5	EAU=KIM SOO-YUN
E6	5	EAU=KIM SOO-YUNG
E7	1	EAU=KIM SOO-Z.
E8	11	EAU=KIM SOO-ZIN
E9	1	EAU=KIM SOO, OK
E10	1	EAU=KIM SOO=CHU

E11 1 AU=KI M SCOA
E12 10 AU=KI M SCOA

Enter P or PAGE for more

? S E1-E3

228 AU=KI M SCOA YOUNG
1 AU=KI M SCOA YOUNG DAVI D
1 AU=KI M SCOA YOUNG SUE
S7 230 E1-E3

? S S7 AND VI BRI O

230 S7
202760 VI BRI O
S8 23 S7 AND VI BRI O

? RD

>>>Duplicate detection is not supported for File 393.

>>>Duplicate detection is not supported for File 391.

>>>Records from unsupported files will be retained in the RD set.

S9 11 RD (unique items)

? T S9/3, K/1-11

>>>KW C option is not available in file(s): 399

9/3, K/1 (Item 1 from file: 24)
DIALOG(R) File 24: CSA Life Sciences Abstracts
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0003522208 IP ACCESSION NO: 7041018
Vibrio vulnificus Vulnibactin, But Not Metalloprotease VvpE, Is
Essentially Required for Iron-Uptake from Human Holotransferrin

Kim Choon-Mee; Park, Ra-Young; Park, Jeong-Hee; Sun, Hui-Yu; Bai,
Young-Hoon; Ryu, Phil-Yeol; Kim Soo-Young; Rhee, Joon-Haeng;
Shin, Sung-Heui
Research Center for Resistant Cells, Chosun University Medical School;
Gwangju 501-759, South Korea, [mailto:shsin@chosun.ac.kr]

Biological & Pharmaceutical Bulletin, v 29, n 5, p 911-918, May 2006
PUBLICATION DATE: 2006

DOCUMENT TYPE: Journal Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

ISSN: 0918-6158

ASFA NO: CS0728831

FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Vibrio vulnificus Vulnibactin, But Not Metalloprotease VvpE, Is
Essentially Required for Iron-Uptake from Human Holotransferrin

... Park, Ra-Young; Park, Jeong-Hee; Sun, Hui-Yu; Bai, Young-Hoon; Ryu,
Phil-Yeol; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

ABSTRACT:

... metalloprotease (VvpE) and catechol-siderophore (vulnibactin) in the
uptake of iron from human transferrins by Vibrio vulnificus have been
determined using different experimental conditions and methods. Therefore,
in this study, we...

DESCRIPTORS: Ascites; Complementat ion; Drugs; Growth; Heart; Iron;
Isochorismate synthase; Metalloprote inase; Mutat ion; Mutat ions;

Repressor s; Transferrins; Vibrio vulnificus

9/3, K/2 (Item 2 from file: 24)
 DIALOG(R) File 24: CSA Life Sciences Abstracts
 (c) 2010 CSA. All rts. reserv.

0003520430 I P ACCESSI ON NO: 6434094
 Inactivation of Vibrio vulnificus Hemolysin by Oligomerization but
 Not Proteolysis

Shin, Sung-Heui; Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai,
 Young-Hoon; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee,
 Shee-Eun; Rhee, Joon-Haeng
 Research Center for Resistant Cells, Chosun University Medical School

Biological & Pharmaceutical Bulletin, v 28, n 7, 2005
 PUBLICATION DATE: 2005

PUBLISHER: Pharmaceutical Society of Japan, 2-12-15, Shibuya Shibuya-ku
 Tokyo 150-0002 Japan, [mailto:ronb@pharm.or.jp],
 [URL: http://bpb.pharm.or.jp]

DOCUMENT TYPE: Journal Article
 RECORD TYPE: Abstract
 LANGUAGE: English
 SUMMARY LANGUAGE: English
 ISSN: 0918-6158
 FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Inactivation of Vibrio vulnificus Hemolysin by Oligomerization but
 Not Proteolysis

... Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai, Young-Hoon; Kim
 Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee, Shee-Eun; Rhee,
 Joon-Haeng

ABSTRACT:
 Vibrio vulnificus extracellular protease (VpE) is believed to
 destroy its hemolysin (VhA) in the late growth...

DESCRIPTORS: Hemolysins; Oligomerization; Proteinase; Proteolysis;
 Western blotting; Vibrio vulnificus

9/3, K/3 (Item 3 from file: 24)
 DIALOG(R) File 24: CSA Life Sciences Abstracts
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0003158407 I P ACCESSI ON NO: 7899305
 Vibrio vulnificus metalloprotease VpE is essentially required for
 swarming

Kim Choon-Mee; Park, Ra-Young; Chun, Ho-Jong; Kim Soo-Young;
 Rhee, Joon-Haeng; Shin, Sung-Heui
 Research Center for Resistant Cells, Chosun University Medical School,
 Gwangju, Korea, [mailto:shsin@chosun.ac.kr]

FEMS Microbiology Letters, v 269, n 1, p 170-179, April 2007
 PUBLICATION DATE: 2007

PUBLISHER: Elsevier Science, P.O. Box 211

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0378-1097
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)
Vibrio vulnificus metalloprotease VvpE is essentially required for swarming

Kim Choon-Mee; Park, Ra-Young; Chun, Ho-Jong; Kim Soo-Young;
Rhee, Joon-Haeng; Shin, Sung-Heui

ABSTRACT:

... by expressions of virulence factors related to invasiveness. In this study, it was determined that Vibrio vulnificus swarming was abolished by mutation of the vvpE gene encoding a metalloprotease VvpE and ...

... DESCRIPTORS: Models; Mucosal immunity; Mutation; N-octanoyl homoserine lactone; Swarming; Lactoferrin; quorum sensing; virulence factors; vvpE gene; Vibrio vulnificus

9/3, K/4 (Item 1 from file: 393)
DI ALOG(R) File 393: Beilstein Database - Abstracts
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Beilstein Abstract Id: 6553384

Title: Vibrio vulnificus Vulnibactin, But Not Metalloprotease VvpE, Is Essentially Required for Iron-Uptake from Human Holotransferrin

Document Type: Journal Record Type: Abstract

Author: Kim Choon-Mee; Park, Ra-Young; Park, Jeong-Hee; Sun, Hui-Yu; Bai, Young-Hoon; Ryu, Phil-Yeol; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

Citation: Biol. Pharm. Bull. (2006) Series: 29-5, 911 - 918 CODEN: BPBLEO Language: English

Abstract Language: English

Title: Vibrio vulnificus Vulnibactin, But Not Metalloprotease VvpE, Is Essentially Required for Iron-Uptake from Human Holotransferrin

... Author: Park, Ra-Young; Park, Jeong-Hee; Sun, Hui-Yu; Bai, Young-Hoon; Ryu, Phil-Yeol; Kim Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

... Abstract: metalloprotease (VvpE) and catechol-siderophore (vulnibactin) in the uptake of iron from human transferrins by Vibrio vulnificus have been determined using different experimental conditions and methods. Therefore, in this study, we...

Keywords: Vibrio vulnificus; metalloprotease; vulnibactin; transferring; iron

9/3, K/5 (Item 2 from file: 393)
DI ALOG(R) File 393: Beilstein Database - Abstracts
(c) 2008 Beilstein GmbH. All rights reserved.

Beilstein Abstract Id: 6505604

Title: Inactivation of Vibrio vulnificus hemolysin by oligomerization but not proteolysis

Document Type: Journal Record Type: Abstract

Author: Shin, Sung-Heui; Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai, Young-Hoon; Kim, Choon-Mee; Kim, Soo-Young; Kim, Young-Ran; Lee, Shee-Eun; Rhee, Joon-Haeng

Citation: Biol. Pharm. Bull. (2005) Series: 28-7, 1294 - 1297 CODEN: BPBLEO Language: English

Abstract Language: English

Title: Inactivation of *Vibrio vulnificus* hemolysin by oligomerization but not proteolysis

... Author: Sun, Hui-Yu; Choi, M-Hwa; Park, Ra-Young; Bai, Young-Hoon; Kim, Choon-Mee; Kim, Soo-Young; Kim, Young-Ran; Lee, Shee-Eun; Rhee, Joon-Haeng

Abstract: *Vibrio vulnificus* extracellular protease (VwpE) is believed to destroy its hemolysin (VwhA) in the late growth...

Keywords: Hemolysin; Oligomerization; Protease; *Vibrio vulnificus*

9/3, K/6 (Item 1 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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146224476 CA: 146(12)224476f JOURNAL

X-gal inhibits the swarming of *Vibrio* species

AUTHOR(S): Kim, Moon-Young; Park, Ra-Young; Bai, Young-Hoon; Chung, Yoon-Young; Kim, Choon-Mee; Kim, Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

LOCATION: Research Center for Resistant Cells, Chosun University Medical School, Gwangju, 501-759, S. Korea

JOURNAL: J. Microbiol. Methods (Journal of Microbiological Methods)

DATE: 2006 VOLUME: 66 NUMBER: 3 PAGES: 552-555 CODEN: JMI MDQ ISSN: 0167-7012 PUBLISHER ITEM IDENTIFIER: 0167-7012(06)00018-2 LANGUAGE: English PUBLISHER: Elsevier B.V.

9/3, K/7 (Item 2 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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146077702 CA: 146(5)77702w JOURNAL

Swarming differentiation of *Vibrio vulnificus* downregulates the expression of the vvhBA hemolysin gene via the LuxS quorum-sensing system

AUTHOR(S): Kim, Moon-Young; Park, Ra-Young; Choi, M-Hwa; Sun, Hui-Yu; Kim, Choon-Mee; Kim, Soo-Young; Rhee, Joon-Haeng; Shin, Sung-Heui

LOCATION: Research Center for Resistant Cells, Chosun University Medical School, Gwangju, 501-759, S. Korea

JOURNAL: J. Microbiol. (Seoul, Repub. Korea) (Journal of Microbiology (Seoul, Republic of Korea)) DATE: 2006 VOLUME: 44 NUMBER: 2 PAGES: 226-232 CODEN: JOM FG ISSN: 1225-8873 LANGUAGE: English PUBLISHER: Microbiological Society of Korea

9/3, K/8 (Item 3 from file: 399)

DI ALOG(R) File 399: CA SEARCH(R)

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145060561 CA: 145(4)60561f JOURNAL

Suppression and inactivation of *Vibrio vulnificus* hemolysin in cirrhotic ascites, a human ex vivo experimental system

AUTHOR(S): Choi, M-Hwa; Park, Ra-Young; Sun, Hui-Yu; Kim, Choon-Mee; Bai, Young-Hoon; Lee, Shee-Eun; Kim, Soo-Young; Kim, Young-Ran; Rhee, Joon-Haeng; Shin, Sung-Heui

10585880VI BRI O.txt

LOCATION: Research Center for Resistant cells, Chosun University Medical School, Gwangju, S. Korea
JOURNAL: FEMS Immunol. Med. Microbiol. (FEMS Immunology and Medical Microbiology) DATE: 2006 VOLUME: 47 NUMBER: 2 PAGES: 226-232 CODEN: FIMEV ISSN: 0928-8244 LANGUAGE: English PUBLISHER: Blackwell Publishing Ltd.

9/3, K/9 (Item 4 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

143402469 CA: 143(22)402469d JOURNAL
Prevalence of antibiotic resistant foodborne bacteria isolated in Korea
AUTHOR(S): Chung, Yun-Hee; Kim, Soo-Young; Chang, Yun-Hee
LOCATION: Test and Research Center, Korea Consumer Protection Board, Seoul, 137-700, S. Korea
JOURNAL: Food Sci. Biotechnol. (Food Science and Biotechnology) DATE: 2005 VOLUME: 14 NUMBER: 2 PAGES: 216-222 CODEN: FSBOBR ISSN: 1226-7708
LANGUAGE: English PUBLISHER: Korean Society of Food Science and Technology

9/3, K/10 (Item 5 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
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143244771 CA: 143(14)244771q JOURNAL
Vibrio vulnificus metalloprotease VvpE has no direct effect on the iron-assimilation from human holotransferrin
AUTHOR(S): Shin, Sung-Heui; Sun, Hui-Yu; Park, Ra-Young; Kim Choon-Mee; Kim Soo-Young; Rhee, Joon-Haeng
LOCATION: Research Center for Resistant Cells, Department of Microbiology, Chosun University Medical School, Gwangju, 501-759, S. Korea
JOURNAL: FEMS Microbiol. Lett. (FEMS Microbiology Letters) DATE: 2005 VOLUME: 247 NUMBER: 2 PAGES: 221-229 CODEN: FMLED7 ISSN: 0378-1097
PUBLISHER ITEM IDENTIFIER: 0378-1097(05)00297-1 LANGUAGE: English
PUBLISHER: Elsevier B. V.

9/3, K/11 (Item 6 from file: 399)
DI ALOG(R) File 399: CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

138283805 CA: 138(19)283805v JOURNAL
Effect of salinity, temperature, and glucose on the production of Vibrio vulnificus hemolysin
AUTHOR(S): Kim Hyun-Soo; Shin, Sung-Heui; Park, Hae-Ryoung; Lee, Shee-Eun; Kim Choon-Mee; Kim Soo-Young; Kim Young-Ran; Lee, Hyun-Chul; Chung, Sun-Sik; Rhee, Joon-Haeng
LOCATION: Department of Microbiology, Chonnam National University Medical School, Kwangju, 501-746, S. Korea
JOURNAL: J. Bacteriol. Virol. (Journal of Bacteriology and Virology) DATE: 2002 VOLUME: 32 NUMBER: 4 PAGES: 355-365 CODEN: JBVOAH ISSN: 1598-2467
LANGUAGE: English PUBLISHER: Journal of Bacteriology and Virology

? S (FLAGEL? OR VI BRI O OR CMCP6 OR (MO6-24/O) OR ATCC29307)
>>>Term "O" is not defined in one or more files

286870 FLAGEL?
202760 VI BRI O
157 CMCP6
1 MO6-24/O
20 ATCC29307

S10 484542 (FLAGEL? OR VI BRI O OR CMCP6 OR (MC6-24/ O) OR ATCC29307)
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? S S10 AND (VI BRI O OR VULNI FI CUS)
484542 S10
202760 VI BRI O
17663 VULNI FI CUS
S11 202761 S10 AND (VI BRI O OR VULNI FI CUS)
? S S11 AND (ADJUV? OR IMMUN? OR ANTI G? OR RESPON?)
Processing
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Processed 10 of 52 files ...
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Processed 20 of 52 files ...
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Processed 30 of 52 files ...
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Processed 40 of 52 files ...
Completed processing all files
202761 S11
809693 ADJUV?
18110203 IMMUN?
5311098 ANTI G?
21814039 RESPON?
S12 62065 S11 AND (ADJUV? OR IMMUN? OR ANTI G? OR RESPON?)
? S S12 AND (MUCOSAL OR MUCOUS OR NASAL OR INTRAMUS? OR SUBCUTA? OR MEMBRANE)
Processing
Processed 20 of 52 files ...
Completed processing all files
62065 S12
583985 MUCOSAL
151358 MUCOUS
503239 NASAL
444515 INTRAMUS?
1021569 SUBCUTA?
6043757 MEMBRANE
S13 10367 S12 AND (MUCOSAL OR MUCOUS OR NASAL OR INTRAMUS? OR
SUBCUTA? OR MEMBRANE)
? S S13 AND ((WHOLE(W CELL) OR (EXTRACT?) OR (ISOLAT?))
Processing
Processed 10 of 52 files ...
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Processing
Processed 20 of 52 files ...
Processing
Processed 30 of 52 files ...
Processing
Completed processing all files
10367 S13
3209804 WHOLE
26289344 CELL
249220 WHOLE(W CELL
6143827 EXTRACT?
9397315 ISOLAT?
S14 2840 S13 AND ((WHOLE(W CELL) OR (EXTRACT?) OR (ISOLAT?))
? S S14 AND (VI BRI O AND (IMMUNE OR ANTI GEN))
2840 S14
202760 VI BRI O
5388432 IMMUNE
3856567 ANTI GEN

S15 1250 S14 AND (VI BRI O AND (IMMUNE OR ANTI GEN))

?

? S S15 AND (MOTI L? OR FLAGEL?)

1250 S15
674913 MOTI L?
286870 FLAGEL?

S16 102 S15 AND (MOTI L? OR FLAGEL?)

? RD

>>>Duplicate detection is not supported for File 393.

>>>Duplicate detection is not supported for File 391.

>>>Records from unsupported files will be retained in the RD set.

S17 69 RD (unique items)

? T S17/3, K/1-69

>>>KW C option is not available in file(s): 399

17/3, K/1 (Item 1 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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0019685624 BIOSIS NO.: 200700345365

The type II interleukin-1 receptor (IL-1RII) of the bony fish gilthead seabream *Sparus aurata* is strongly induced after infection and tightly regulated at transcriptional and post-transcriptional levels

AUTHOR: Lopez-Castejon Gloria; Pilar Sepulcre M; Roca Francisco J; Castellana Barbara; Planas Josep V; Meseguer Jose; Mulero Victoriano (Reprint)

AUTHOR ADDRESS: Univ Murcia, Fac Biol, Dept Cell Biol, Murcia 30100, Spain
** Spain

AUTHOR E-MAIL ADDRESS: vmulero@um.es

JOURNAL: Molecular Immunology 44 (10): p2772-2780 APR 2007 2007

ITEM IDENTIFIER: doi: 10.1016/j.molimm.2006.10.027

ISSN: 0161-5890

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

... ABSTRACT: 1RII), lacks an intracellular signalling domain and acts as a decoy receptor that down-regulates responses to IL-1 beta. Although both receptors are present in bony fish, their expression and...

... vertebrates remain to be established. In this study, a homologue of mammalian IL-1RII was isolated and characterized in the gilthead seabream (*Sparus aurata*). The seabream IL-1RII harboured two Ig...

... with that from other species and contained three ATTTA instability motifs, which seem to be responsible for its relatively short half-life (less than 2h). The expression of seabream IL-1RII was dramatically up-regulated after infection with *Vibrio anguillarum* in all the immune tissues examined and was even more strongly induced than the IL-1 beta gene in...

... leaking into the systemic circulation from the sites of inflammation. In vitro, bacterial DNA and flagellin increased the mRNA levels of IL-1RII in macrophages, while only flagellin was able to weakly induce its expression in acidophilic granulocytes. Finally, the seabream IL-1RII was localized in the plasma membrane when expressed in HEK293 cells and was able to bind IL-1 beta. (c) 2006...

DESCRIPTORS:

... MAJOR CONCEPTS: Immune System

... ORGANISMS: *Vibrio anguillarum* (Vibrionaceae)

10585880VIBRIO.txt

...ORGANISMS: PARTS ETC: immune system blood and lymphatics...

...immune system blood and lymphatics

CHEMICALS & BIOCHEMICALS: ...flagellin;

17/3, K/2 (Item 2 from file: 5)

DIALOG(R) File 5: Biosis Previews(R)

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19145465 BIOSIS NO.: 200600490860

Antigenicity analysis of V-harveyi TS-628 strain

AUTHOR: Qin Ying-xue (Reprint); Wang Jun; Wang Shi-feng; Yan Qing-pi

AUTHOR ADDRESS: Xiamen Univ, Dept Oceanog, Inst Subtrop Ocean, Xiamen
361000, Peoples R China**Peoples R China

AUTHOR E-MAIL ADDRESS: junw@xmu.edu.cn

JOURNAL: Xiamen Daxue Xuebao (Ziran Kexue Ban) 45 (3): p393-396 MAY 2006
2006

ISSN: 0438-0479

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: Chinese

Antigenicity analysis of V-harveyi TS-628 strain

ABSTRACT: *Vibrio harveyi*, the major causal agent of vibriosis, affects a diverse range of marine cultured organisms over a wide geographical area, while the reports about screening the effective antigen and the researches on vaccines of *V. harveyi* are scarce. Flagellin, lipopolysaccharide (LPS) and outer membrane proteins (OMP) are major immunogenic antigens in many Gram-negative bacteria. In this study, the flagellin, OMP and LPS of *V. harveyi* TS-628 strain isolated from the groupers infected by it were extracted and Western blot analysis was used to detect the antigenicity of these extractions. The results of the Western blot assay revealed that there were 4 positive flagellin bands about 35, 38, 43 and 52 ku, of which the 43 and 52 ku...

...the LPS was Western blot-negative. These results indicated that the 43 and 52 ku flagellin and the OMP such as 43, 52 ku proteins could be the candidates to develop...

DESCRIPTORS:

...ORGANISMS: *Vibrio harveyi* (Vibrionaceae

MESH TERMS: *Vibrio* Infections (MeSH)

CHEMICALS & BIOCHEMICALS: ...flagellin; ...

...outer membrane proteins {OMP}...

...immunogenic antigens

...METHODS & EQUIPMENT: electrophoretic techniques, immunologic techniques, laboratory techniques...

...antigenicity analysis

17/3, K/3 (Item 3 from file: 5)

DIALOG(R) File 5: Biosis Previews(R)

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13916629 BIOSIS NO.: 199799550689

Spontaneous binding of *Vibrio cholerae* to human leucocytes

AUTHOR: Monno R (Reprint); Valenza MA; Panaro MA; Lisi S; Maruccillo L; De

Vito D; Mtol o V
AUTHOR ADDRESS: Inst. Med. Microbiol., Sch. Med., Univ. Bari, Policlinico,
Piazza G. Cesare, 70124 Bari, Italy**Italy
JOURNAL: Microbios 88 (356): p169-176 1997 1997
ISSN: 0026-2633
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

Spontaneous binding of *Vibrio cholerae* to human leucocytes

...ABSTRACT: capacity to bind different strains of Gram-negative bacteria. The capacity of a strain of *Vibrio cholerae*, biotype El Tor, isolated during an outbreak of cholera, to adhere to mononuclear cells isolated from peripheral blood was evaluated. *V. cholerae* binds to mononuclear cells in a dose-dependent...

...of binding sites on the cell surface, decreased at lower cell/bacteria ratios. Studies on isolated cellular populations demonstrated that 51, 42 and 38% respectively, of CD4+, CD8+ and B cells...

...to *Helicobacter pylori*. The findings indicate that *V. cholerae* possesses multiple 'adhesins' such as fimbriae, flagella, haemagglutinins, lipopolysaccharides, and outer membrane proteins. The capacity to bind to blood lymphocytes may reflect the same capacity for the...

DESCRIPTORS:

... MAJOR CONCEPTS: Immune System
... ORGANISMS: *Vibrio cholerae* (Vibrionaceae)
CHEMICALS & BIOCHEMICALS:
Miscellaneous TERMS: ... IMMUNE SYSTEM

CONCEPT CODES:

17/3, K/4 (Item 4 from file: 5)
DI ALOG(R) File 5: Biosis Previews(R)
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12338039 BIOSIS NO.: 199497359324

Microbial virulence mechanisms

AUTHOR: Gruse J M; Lewis R E Jr

AUTHOR ADDRESS: Dep. Pathol., Univ. Miss., Med. Center, Jackson, MS, USA**
USA

JOURNAL: EOS- Rivista di Immunologia ed Immunofarmacologia 14 (1): p3-14
1994 1994

ISSN: 0392-6699

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

...ABSTRACT: is determined by its virulence factors. The production of toxins represents an important virulence mechanism. *Vibrio cholerae*, *Bordetella pertussis*, and selected *Escherichia coli* attach to mucosal surfaces and produce adverse effects by cell contact followed synthesis of toxins. *Salmonella*, *Shigella*, and...

...following attachment. Their virulence factors help them to survive by evading or countering host defenses. Antigenic variation of surface epitopes serves as a useful mechanism to evade host defense mechanisms by...

...virulence factors may involve a two component system that affects gene expression. Molecular cloning permits isolation of virulence genes.

10585880VI BRI O.txt

A molecular version of Koch's postulates provides proof for a connection between genes and virulence. Many microorganisms may produce pili, flagella, spores, enzymes or toxins that aid their attempts to invade host tissues and establish themselves...

...produce disease. Microorganisms may produce disease by first colonizing the respiratory, genito urinary or gastrointestinal mucous membranes. This permits bacteria multiplication and colonization. The ability of the microbes to attach to the mucosal surface prevents their elimination by natural defenses. Adhesins represent significant virulence factors. Surface structures such...

DESCRIPTORS:

... MAJOR CONCEPTS: Immune System
CHEMICALS & BIOCHEMICALS:

17/3, K/5 (Item 5 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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11960196 BIOSIS NO.: 199396124612
Characteristics of the causative bacterium of vibriosis in the kuruma prawn, *Penaeus japonicus*
AUTHOR: De La Pena Leobert; Tamaki Takahiro; Momoyama Kazuo; Nakai Toshihiro; Muroga Kiyokuni (Reprint)
AUTHOR ADDRESS: Fac. Applied Biological Sci., Hiroshima Univ., Higashi-Hiroshima 724, Japan**Japan
JOURNAL: Aquaculture 115 (1-2): p1-12 1993
ISSN: 0044-8486
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Seventy-five strains of bacteria, which were isolated from diseased kuruma prawns (*Penaeus japonicus*) in several prefectures of western Japan from 1985 to...

...strains were classified as members of one species which seems to be identical to the *Vibrio* sp. reported as the causative agent of vibriosis in the kuruma prawn. Some selected strains of our isolates were confirmed to be pathogenic to the kuruma prawn by intramuscular injection. The bacterium is a gram-negative, motile, and 0/129 (*Vibrio* static compound) sensitive short rod. It does not decarboxylate arginine, lysine or ornithine. The growth ...

...content of DNA was 46.7 +/- 0.7 mol%. There was a major common O-antigen among all the tested strains of the pathogen, but it was possible to differentiate the...

...fish pathogenic vibrios by slide agglutination tests. It is proposed that this pathogen is named *Vibrio* sp. PJ (PJ: *Penaeus japonicus*).

17/3, K/6 (Item 6 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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11383227 BIOSIS NO.: 199294085068
CROSSED IMMUNOELECTROPHORETIC ANALYSIS OF ANTIGENIC COMPOSITION OF B-SUBUNIT-WHOLE-CELL AND WHOLE-CELL ONLY KILLED ORAL CHOLERA VACCINES

AUTHOR: CIZNAR I (Reprint); AHSAN C R; RAHMAN A; SHAHABUDDIN M; BARTKOVA G;
CLEMENS J D; SACK D A
AUTHOR ADDRESS: INSTITUTE PREVENTIVE AND CLINICAL MEDICINE, LIMBOVA 14, 833
01 BRATISLAVA, CZECH AND SLOVAK FEDERATIVE REPUBLIC**SLOVAKIA
JOURNAL: Vaccine 10 (9): p591-596 1992
ISSN: 0264-410X
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

CROSSED IMMUNOELECTROPHORETIC ANALYSIS OF ANTIGENIC COMPOSITION
OF B-SUBUNIT-WHOLE-CELL AND WHOLE-CELL ONLY
KILLED ORAL CHOLERA VACCINES

ABSTRACT: Crossed immunoelectrophoresis was used to identify
antigens preserved in the whole-cell component of oral
cholera vaccines tested in the field trial in Bangladesh. The composition
and immunogenicity of the vaccine antigens were compared with
those of antigens obtained from live cells of *Vibrio cholerae*
O1 of both biovars and serovars. The whole-cell component of
the vaccine contained ten antigens in comparison with the live
Vibrio cells which revealed the presence of 30 antigens. The
whole-cell component contained lipopolysaccharide,
flagellar antigen, one cell-bound haemagglutinin and at least
six outer membrane protein antigens.

DESCRIPTORS: VIBRIO-CHOLERAEE HUMAN BIOVAR SEROVAR LIPOPOLYSACCHARIDE
MEMBRANE PROTEIN ANTIGEN IMMUNOGENICITY FIELD TRIAL
BANGLADESH

DESCRIPTORS:

... MAJOR CONCEPTS: Immune System
CHEMICALS & BIOCHEMICALS:

17/3, K/7 (Item 7 from file: 5)
DI ALOG(R) File 5: Biosis Previews(R)
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08607234 BIOSIS NO.: 198783086125
DETERMINANTS OF THE IMMUNOGENICITY OF LIVE VIRULENT AND MUTANT
VIBRIO-CHOLERAEE O1 IN RABBIT INTESTINE
AUTHOR: PIERCE N F (Reprint); KAPER J B; MEKALANOS J J; CRAY W C JR;
RICHARDSON K
AUTHOR ADDRESS: DIARRHOEAL DISEASES CONTROL PROGRAMME, WORLD HEALTH
ORGANIZATION, 1211 GENEVA 27, SWITZERLAND
JOURNAL: Infection and Immunity 55 (2): p477-481 1987
ISSN: 0019-9567
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

DETERMINANTS OF THE IMMUNOGENICITY OF LIVE VIRULENT AND MUTANT
VIBRIO-CHOLERAEE O1 IN RABBIT INTESTINE

ABSTRACT: Determinants of the capacity of live *Vibrio cholerae* O1
isolates to evoke specific immune responses in
intestinal mucosa were studied in rabbits, using mucosal
immunoglobulin A (IgA) antitoxin as the measured immune
response. Antitoxin responses were evoked mostly by the
primary inoculation and were dose dependent; secondary-type
responses were modest and occurred only when the booster inoculum
was large, i.e., 10¹⁰ CFU. The efficiency of mucosal
immunization correlated closely with the mucosal colonizing

capacity of the infecting strain and was otherwise independent of toxin genotype (A+ B+ or A- B+) or whether the strain was motile or nonmotile. Live bacteria evoked mucosal antitoxin more efficiently than did purified cholera toxin. Prior immunization with a nontoxinogenic (A- B-) V. cholerae strain interfered significantly with the induction of mucosal antitoxin by subsequent immunization with its fully toxinogenic (A+ B+) parent. These results demonstrate the marked efficiency with which live V. cholerae stimulate a specific enteric mucosal secretory IgA response. They support the view that mucosal colonization aids efficient delivery of bacterial antigens to responsive subepithelial lymphoid tissue. This might occur by transfer of colonizing bacteria through M cells into...

...by efficient delivery of secreted toxin to M cells by mucosa-associated organisms. Preexisting antibacterial immunity interferes with colonization, which may prevent efficient antigenic stimulation and which may explain the relatively weak response to booster immunization. The same process may also limit the efficacy of hybrid enteric bacterial vaccines when there is preexisting mucosal immunity to the carrier organism due to either natural exposure or prior immunization with another vaccine that uses the same carrier.

DESCRIPTORS: VACCINE IMMUNOGLOBULIN A

DESCRIPTORS:

... MAJOR CONCEPTS: Immune System

CHEMICALS & BIOCHEMICALS:

17/3, K/8 (Item 8 from file: 5)
 DI ALOG(R) File 5: Bi o s i s P r e v i e w s (R)
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06616498 BI O S I S N O . : 198274032921

ROLE OF SOMATIC ANTIGEN OF VIBRIO-CHOLERA IN ADHESION TO
 INTESTINAL MUCOSA

AUTHOR: CHITNIS D S (Reprint); SHARMA K D; KAMAT R S

AUTHOR ADDRESS: DEP OF CLIN PATHOLOGY, HAFKINE INST, PAREL, BOMBAY 400
 012, INDIA**INDIA

JOURNAL: Journal of Medical Microbiology 15 (1): p53-62 1982

ISSN: 0022-2615

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: ENGLISH

ROLE OF SOMATIC ANTIGEN OF VIBRIO-CHOLERA IN ADHESION TO
 INTESTINAL MUCOSA

ABSTRACT: The in-vitro adhesion of V. cholerae to intestinal mucous membrane was studied in isolated adult-rabbit ileal loops. Antisomatic antiserum against V. cholerae Inaba could inhibit adhesion of 3...

...titer was 320, its anti-Inaba lipopolysaccharide (LPS) titer was 16,000 and its anti-flagellar antibody titer was 3200. Anti-live V. cholerae Inaba antiserum absorbed with boiled cells of...

...cholerae Inaba. This antiserum had no anti-LPS or bacterial agglutinin activity, but its anti-flagellar antibody titer was 32,000. Thus, ability to inhibit adhesion of V. cholerae could be...

...anti-LPS) antibody activity. Antisomatic antiserum had no activity against adhesion, a V. cholerae surface antigen described by Freter. Anti-live V. cholerae antiserum absorbed with boiled cells showed

anti-adhesi n...

...cholerae strain 569B Inaba could inhibit adhesion of 2 different Inaba strains to the intestinal mucous membrane. Thus, the somatic antigen evidently plays a major role in the adhesion of V. cholerae to the intestinal mucous membrane.

DESCRIPTORS: RABBIT INABA STRAIN NONAGGLUTINATING VIBRIOS ENTEROTOXIGENIC FLAGELLA LIPO POLY SACCHARIDE ANTIBODY ANTISERUM AGGLUTININ TITER MEMBRANE FRETTER

DESCRIPTORS:

... MAJOR CONCEPTS: Immune System
CHEMICALS & BIOCHEMICALS:

17/3, K/9 (Item 9 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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05987424 BIOSIS NO.: 198070018911
CHARACTERIZATION OF A FLAGELLAR SHEATH PROTEIN OF VIBRIO
- CHOLERA

AUTHOR: HRANITZKY KW (Reprint); MULHOLLAND A; EUBANKS ER; HART LT;
LARSON A D

AUTHOR ADDRESS: DEPT MICROBIOLOGY, LA STATE UNIV, BATON ROUGE, LA 70808, USA**
USA

JOURNAL: Infection and Immunity 27 (2): p597-603 1980

ISSN: 0019-9567

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: ENGLISH

CHARACTERIZATION OF A FLAGELLAR SHEATH PROTEIN OF VIBRIO
- CHOLERA

ABSTRACT: A flagellar sheath protein of V. cholerae CA401 (Inaba) was characterized. Purity of the preparation was indicated...

... of 61,500, 60,000 and 56,500. The presence of sheath protein on the flagellum and on the outer membrane of the cell was demonstrated by ferritin labeling experiments with antiserum. Sheath protein antibody reacted...

... experiments and agglutination tests with a classical Ogawa strain and 2 non-agglutinating V. cholerae isolates. The sheath protein may represent the common Vibrio H antigen. Antibody specific for lipopolysaccharide labeled the cell but not the sheathed flagellum, which demonstrated that the sheath is not a simple extension of the outer membrane of the cell.

DESCRIPTORS: RABBIT ANTIBODY MOLECULAR WEIGHT LIPO POLY SACCHARIDE OUTER MEMBRANE

17/3, K/10 (Item 10 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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05743248 BIOSIS NO.: 197968054747
A RAPID TEST FOR THE IDENTIFICATION OF ALL SEROTYPES OF VIBRIO
- CHOLERA INCLUDING NONAGGLUTINATING VIBRIOS

AUTHOR: SIL J (Reprint); BHATTACHARYA FK

AUTHOR ADDRESS: WHO COLLAB CENT REF RES VIBRIOS, NATL INST CHOLERA ENTERIC

10585880VI BRI O.txt

DIS, CALCUTTA 700 032, W BENGAL, INDI A**INDI A
JOURNAL: Journal of Medical Microbiology 12 (1): p63-70 1978
ISSN: 0022-2615
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

A RAPID TEST FOR THE IDENTIFICATION OF ALL SEROTYPES OF VIBRIO
-CHOLERAE INCLUDING NONAGGLUTINATING VIBRIOS

...ABSTRACT: serotypes of V. cholerae (particularly NAG [non-agglutinating] vibrios) was developed. The reaction involves the flagellar H antigen complex which is a species characteristic in vibrios. The novel feature of the test is...
...gross cell morphology. This low concentration of phenol may cause damage to the outer envelope membrane which normally covers the flagellum and acts as a barrier to H antibody in the living vibrio. The species-specificity of the PH test with H antiserum was established with 96 cultures...
...for conventional bacteriological tests. The test was equally effective with stock cultures or unknown freshly isolated strains from several sources. Unabsorbed, whole-cell (OH) antiserum was used successfully and this simplification is recommended for routine use. The advantages...

DESCRIPTORS: SLIDE AGGLUTINATION TEST FLAGELLAR H ANTIGEN
DESCRIPTORS:

MAJOR CONCEPTS: Immune System..
CHEMICALS & BIOCHEMICALS:

17/3, K/11 (Item 1 from file: 24)
DIALOG(R) File 24: CSA Life Sciences Abstracts
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0003717515 IP ACCESSION NO: 9272133
Antigenicity analysis of Vibrio harveyi TS-628 strain

Yingxue, Qian; Jun, Wang; Shifeng, Wang; Qingpi, Yan
Department of Oceanography, Institute of Subtropical Ocean, Xiamen University, Xiamen, 361000, China, [mailto:junw@mu.edu.cn]

Frontiers of Biology in China, v 2, n 3, p 263-267, July 2007
PUBLICATION DATE: 2007

PUBLISHER: Springer-Verlag, Tiergartenstrasse 17 Heidelberg 69121 Germany,
[mailto:subscriptions@springer.de], [URL: http://www.springer.de/]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 1673-3509

ELECTRONIC ISSN: 1673-3622
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)
Antigenicity analysis of Vibrio harveyi TS-628 strain

ABSTRACT:
Vibrio harveyi, the major causative agent of vibriosis, affects a diverse range of marine cultured organisms over a wide geographical area. However, reports about screening the effective antigen and research

on vaccines of *V. harveyi* are scarce. Flagellin, lipopolysaccharide (LPS) and outer membrane proteins (OMP) are major immunogenic antigens in many Gram-negative bacteria. In this study, the flagellin, OMP and LPS of the *V. harveyi* TS-628 strain isolated from infected groupers were extracted and Western blot analysis was used to detect the antigenicity of these extractions. Results of the Western blot assay reveal that there are four positive flagellin bands: 35 kDa, 38 kDa, 43 kDa, and 52 kDa, of which the 43 kDa...

...LPS is Western blot-negative. These results indicate that the 43 kDa and 52 kDa flagellin and OMP of size 43 kDa, 52 kDa can be candidates for developing vaccines against...

DESCRIPTORS: Antigenicity; Flagellin; Gram-negative bacteria; Immunogenicity; Lipopolysaccharides; Vaccines; Vibriosis; Western blotting; outer membrane proteins; *Vibrio harveyi*
... SUBJECT: Immunology

17/3, K/12 (Item 2 from file: 24)
DIALOG(R) File 24: CSA Life Sciences Abstracts
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0003383415 IP ACCESSION NO: 8555211
The type II interleukin-1 receptor (IL-1RII) of the bony fish gilthead seabream *Sparus aurata* is strongly induced after infection and tightly regulated at transcriptional and post-transcriptional levels

Lopez-Castejon, Gloria; Sepulcre, MPilar; Roca, Francisco J; Castellana, Barbara; Planas, Josep V; Mesguer, Jose; Mulero, Victoriano
Department of Cell Biology, Faculty of Biology, University of Murcia, 30100 Murcia, Spain, [mailto:vmulero@um.es]

Molecular Immunology, v 44, n 10, p 2772-2780, April 2007
PUBLICATION DATE: 2007

PUBLISHER: Elsevier Science, P. O. Box 800 Kidlington Oxford OX5 1DX UK,
[mailto:nlinfo-f@elsevier.nl], [URL: http://www.elsevier.nl]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0161-5890
FILE SEGMENT: Immunology Abstracts

ABSTRACT:
... 1RII), lacks an intracellular signalling domain and acts as a decoy receptor that down-regulates responses to IL-1 beta. Although both receptors are present in bony fish, their expression and...

...vertebrates remain to be established. In this study, a homologue of mammalian IL-1RII was isolated and characterized in the gilthead seabream (*Sparus aurata*). The seabream IL-1RII harboured two Ig...

...with that from other species and contained three ATTTA instability motifs, which seem to be responsible for its relatively short half-life (less than 2 h). The expression of seabream IL-1RII was dramatically up-regulated after infection with *Vibrio anguillarum* in all the immune tissues examined and was even more strongly induced than the IL-1 beta gene in...

...leaking into the systemic circulation from the sites of inflammation. In vitro, bacterial DNA and flagellin increased the mRNA levels of IL-1RII in macrophages, while only flagellin was able to weakly induce its expression in acidophilic granulocytes. Finally, the seabream IL-1RII was localized in the plasma membrane when expressed in HEK293 cells and was able to bind IL-1 beta.

DESCRIPTORS: 3' Untranslated regions; DNA; Flagellin; Infection; Inflammation; Interleukin 1; Interleukin 1 receptors; Intracellular signalling; Kidney; Leukocytes (granulocytic); Liver; Macrophages; Plasma membranes; Post-transcription; Signal transduction; Spleen; Transcription; Sparus aurata; Vibrio anguillarum
...SUBJ CATG: Fish Immunity

17/3, K/13 (Item 1 from file: 34)
DIALOG(R) File 34: Sci Search(R) Cited Ref Sci
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05448303 Genuine Article#: VZ469 No. References: 35
Title: IMMUNOLOGICAL ANALYSIS OF EXTRACELLULAR PRODUCTS AND CELL-SURFACE COMPONENTS OF MOTILE AEROMONAS ISOLATED FROM FISH
Author: SANTOS Y; BANDINI I; TORANZO AE
Corporate Source: UNIV SANTIAGO, FAC BIOL, DEPT MICROBIOL & PARASITOL/ SANTIAGO COMPOSTE 15706// SPAIN
Journal: JOURNAL OF APPLIED BACTERIOLOGY, 1996, V81, N6 (DEC), P585-593
ISSN: 0021-8847
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: IMMUNOLOGICAL ANALYSIS OF EXTRACELLULAR PRODUCTS AND CELL-SURFACE COMPONENTS OF MOTILE AEROMONAS ISOLATED FROM FISH

Abstract: The present work describes the characterization of antigens present in the extracellular products (ECP) and cell wall of strains of motile Aeromonas isolated from rainbow trout culture systems. The relationships among virulence for fish, O-serogroup and profile...

...were also examined. The slide agglutination test showed that most of the virulent strains of motile Aeromonas (72%) were included in the serotypes O3, O6, O11 and O19 (Guinee and Jansen...

...ECP showed heterogeneity not only among the different serogroups but also within the same serotype. Immunoblot assays of cell envelope components, and of LPS present in the ECP demonstrated a close relationship among Aeromonas strains from the same serotype, while strains from different serotypes were not immunologically related. Moreover, this assay showed that motile Aeromonas belonging to distinct serotypes produced extracellular proteins immunologically related. On the other hand, antigenic cross reactivity was observed between the LPS obtained from cell envelope and those obtained from...

...which predominates in a particular area and their ECPs in the formation of vaccines against motile Aeromonas septicaemia.

...Identifiers: OUTER-MEMBRANE PROTEINS; VIBRIO-ANGUILLARUM; MESOPHILIC AEROMONAS; POLYACRYLAMIDE GELS; RAINBOW TROUT; IMMUNE-RESPONSE; STRAINS; HYDROPHILIA; LIPOPOLYSACCHARIDES; IDENTIFICATION

...Research Fronts: SPECIFIC SKELETAL-MUSCLE PROTEIN-TYROSINE PHOSPHATASES; ALPHA-B-CRYSTALLIN EXPRESSION

95-6015 002 (LIPOPOLYSACCHARIDE O-ANTIGEN; RFB GENES; BACTERIAL

10585880VI BRI O.txt
OUTER-MEMBRANE; ALTERED LIPOOLIGOSACCHARIDES; DIFFERENT
SHIGELLA-FLEXNERI SEROTYPES)
95-7203 001 (MOLECULAR EPIDEMIOLOGY OF AN SHV...

17/3, K/14 (Item 2 from file: 34)
DI ALOG(R) File 34: Sci Search(R) Cited Ref Sci
(c) 2010 The Thomson Corp. All rights reserved.

02656862 Genuine Article#: LU219 No. References: 25
Title: CHARACTERISTICS OF THE CAUSATIVE BACTERIUM OF VIBRIOSIS IN THE
KURUMA PRAWN, PENAEUS-JAPONICUS
Author: DELAPENA LD; TAMAKI T; MOMOYAMA K; NAKAI T; MUROGA K
Corporate Source: HIROSHIMA UNIV, FAC APPL BIOL SCI, 4-4 KAGAMIYAMA1
CHOE/ HIROSHIMA 724//JAPAN; HIROSHIMA UNIV, FAC APPL BIOL SCI, 4-4
KAGAMIYAMA1 CHOE/ HIROSHIMA 724//JAPAN; YAMAGUCHI PREFECTURAL NAIKAI
FISHERIES EXPT STN/ YAMAGUCHI//JAPAN
Journal: AQUACULTURE, 1993, V115, N1-2 (AUG 15), P1-12
ISSN: 0044-8486
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Abstract: Seventy-five strains of bacteria, which were isolated from
diseased kuruma prawns (*Penaeus japonicus*) in several prefectures of
western Japan from 1985 to...

...strains were classified as members of one species which seems to be
identical to the *Vibrio* sp. reported as the causative agent of
vibriosis in the kuruma prawn. Some selected strains of our
isolates were confirmed to be pathogenic to the kuruma prawn by
intramuscular injection. The bacterium is a gram-negative,
motile, and 0/129 (*Vibrio* static compound) sensitive short
rod. It does not decarboxylate arginine, lysine or ornithine. The
growth...

...content of DNA was 46.7 +/- 0.7 mol % There was a major common O-
antigen among all the tested strains of the pathogen, but it was
possible to differentiate the...

...fish pathogenic vibrios by slide agglutination tests. It is proposed
that this pathogen is named *Vibrio* sp. PJ (PJ: *Penaeus*
japonicus).

17/3, K/15 (Item 1 from file: 72)
DI ALOG(R) File 72: EMBASE
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0080948357 EMBASE/ Medline No: 2006008279
Capsule-mediated immune evasion: A new hypothesis explaining
aspects of typhoid fever pathogenesis
Raffatellu M; Chessa D; Wilson R.P.; Tukel C.; Akcelik M; Baumber A.J.
Department of Medical Microbiology and Immunology, School of Medicine,
University of California at Davis, One Shields Ave., Davis, CA 95616-8645
United States
AUTHOR EMAIL: ajbaumber@ucdavis.edu
CORRESP. AUTHOR/ AFFILI: Baumber A.J.: Department of Medical Microbiology
and Immunology, School of Medicine, University of California at Davis, One
Shields Ave., Davis, CA 95616-8645, United States
CORRESP. AUTHOR EMAIL: ajbaumber@ucdavis.edu

Infection and Immunity (Infect. Immun.) (United States) January 1,
2006, 74/1 (19-27)
CODEN: INFI B ISSN: 0019-9567

DOI: 10.1128/IAI.74.1.19-27.2006

DOCUMENT TYPE: Journal; Short Survey RECORD TYPE: Citation

LANGUAGE: English

NUMBER OF REFERENCES: 130

Capsule-mediated immune evasion: A new hypothesis explaining aspects of typhoid fever pathogenesis

DRUG DESCRIPTIONS:

alpha chemokine--endogenous compound--ec; CD14 antigen--endogenous compound--ec; gamma interferon--endogenous compound--ec; interferon regulatory factor 3--endogenous compound--ec...

MEDICAL DESCRIPTIONS:

*bacterial membrane; *immune system; *typhoid fever--etiology--et

bacterial flagellum; bacterial strain; bacterium isolate; Campylobacter; clinical feature; cytokine production; cytokine release; diarrhea--etiology--et; Entamoeba histolytica; Escherichia coli; gastroenteritis...

...interaction; human; neutrophil chemotaxis; nonhuman; pathogenesis; priority journal; Salmonella typhimurium; Shigella flexneri; short survey; symptomatology; Vibrio cholerae

SECTION HEADINGS:

Immunology, Serology and Transplantation

Microbiology: Bacteriology, Mycology, Parasitology and Virology

General Pathology and Pathological Anatomy

17/3, K/16 (Item 2 from file: 72)

DIALOG(R) File 72: EMBASE

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0075379690 EMBASE/Medline No: 1993159246

Characterization of a novel chromosomal virulence locus involved in expression of a major surface flagellar sheath antigen of the fish pathogen *Vibrio anguillarum*

Norqvist A.; Wolf-Watz H.

Department of NBC Defence, National Defence Res. Establishment, S-901 82 Umea, Sweden

CORRESP. AUTHOR/AFFIL: Norqvist A.: Department of NBC Defence, National Defence Res. Establishment, S-901 82 Umea, Sweden

Infection and Immunity (INFECT. IMMUN.) (United States) June 15, 1993, 61/6 (2434-2444)

CODEN: INFI B ISSN: 0019-9567

DOCUMENT TYPE: Journal; Article RECORD TYPE: Abstract

LANGUAGE: English SUMMARY LANGUAGE: English

Characterization of a novel chromosomal virulence locus involved in expression of a major surface flagellar sheath antigen of the fish pathogen *Vibrio anguillarum*

The fish pathogenic bacterium *Vibrio anguillarum* 775.17B was mutated by the use of transposon Tn5-132. Two hundred independent exconjugants were isolated and screened for a reduction of virulence in experimental infections of rainbow trout (*Oncorhynchus mykiss*...

...and a closely linked upstream gene (*virB*). A *virB* mutant of 775.17B, NQ706, was isolated and also shown to be avirulent. The deduced amino acid sequences of *virA* and *virB*...

...42,000, respectively. Insertional mutagenesis of the corresponding *virA* and *virB* genes of a clinical isolate of *V. anguillarum* serotype O1, also resulted in avirulence. In immunoblot experiments, the total

cell lysates of VAN70 (virA) and NQ706 (virB) did not respond to a rabbit polyclonal antiserum directed against whole cells of 775.17B (wild type). This suggests that virA and virB are involved in the biosynthesis of a major surface antigen important for the virulence of *V. anguillarum*. Immunogold electron microscopy showed that a constituent of the flagellar sheath was expressed by 775.17B (wild type) but not by VAN70 (virA) and NQ706 (virB), suggesting that the major surface antigen lacking in VAN70 and NQ706 is located on the outer sheath of the flagellum. Analysis of this major surface antigen revealed it likely to be lipopolysaccharide. Further analysis showed that the flagellum and the major surface antigen were expressed in vivo during fish infections.

DRUG DESCRIPTORS:

membrane antigen

MEDICAL DESCRIPTORS:

animal experiment; article; bacterial virulence; fish; flagellum; gene expression; gene locus; gene mutation; genetic analysis; nonhuman; priority journal; vibrio

17/3, K/17 (Item 3 from file: 72)
 DI ALOG(R) File 72: EMBASE
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0075281641 EMBASE/ Medline No: 1993061183

Identification of the flagellar antigens of *Vibrio cholerae* El Tor and their role in protection

Sinha V. B.; Jacob A.; Srivastava R.; Kaper J. B.; Srivastava B. S.

Division of Microbial Genetics, Central Drug Research Institute, Lucknow 226001, India

CORRESP. AUTHOR/ AFFILI: Srivastava B. S.: Division of Microbial Genetics, Central Drug Research Institute, Lucknow 226001, India

Vaccine (VACCINE) (United Kingdom) March 9, 1993, 11/3 (372-375)

CODEN: VACCD ISSN: 0264-410X

DOI: 10.1016/0264-410X(93)90202-9

DOCUMENT TYPE: Journal; Article RECORD TYPE: Abstract

LANGUAGE: English SUMMARY LANGUAGE: English

Identification of the flagellar antigens of *Vibrio cholerae* El Tor and their role in protection

Antiserum to the surface antigens of the wild-typed flagellate strain KB207 of *Vibrio cholerae* El Tor was absorbed with isogenic aflagellate mutant CD12. Antibodies remaining in the absorbed serum exhibited specificity to KB207 but not to CD12 and inhibited motility of KB207. Proteins from cell-free lysates of KB207 and CD12 were analysed by sodium ..

... 40 and 38 kDa. These proteins were detected in KB207 when electrophoretically separated proteins were immunoblotted with unabsorbed and absorbed sera. These two proteins were isolated by immunoaffinity chromatography using purified antibodies from absorbed serum. Although antigenic, the 40 and 38 kDa proteins did not induce protection against cholera in the rabbit...

DRUG DESCRIPTORS:

*bacterial antigen; *cholera vaccine--drug development--dv; *cholera vaccine--drug therapy--dt

MEDICAL DESCRIPTORS:

*cholera--drug therapy--dt; *cholera--prevention--pc; *flagellate; *immunization; *vibrio cholerae

10585880VI B R I O . t x t

animal experiment; animal tissue; article; controlled study;
immunoblotting; nonhuman; rabbit; subcutaneous drug
administration

SECTION HEADINGS:

Immunology, Serology and Transplantation

Drug Literature Index

Microbiology: Bacteriology, Mycology, Parasitology and Virology

Gastroenterology

17/3, K/18 (Item 1 from file: 73)

DIALOG(R) File 73: EMBASE

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0071646391 EMBASE/ Medline No: 1980152334

Evaluation of the phenol-induced flagellar agglutination test for
the identification of the cholera group of vibrios

Pastoris M.C.; Bhattacharyya F.K.; Sil J.

Ist. Sup. San., Rome, Italy:

CORRESP. AUTHOR/ AFFILI: Ist. Sup. San., Rome, Italy

Journal of Medical Microbiology (J. MED. MICROBIOL.) (United Kingdom)
August 1, 1980, 13/2 (363-367)

CODEN: JMM A ISSN: 0022-2615

DOCUMENT TYPE: Journal RECORD TYPE: Abstract

LANGUAGE: English

Evaluation of the phenol-induced flagellar agglutination test for
the identification of the cholera group of vibrios

The number of O serotypes of *Vibrio cholerae* now recognised is at
least 75 (Dr A.L. Furniss personal communication). This presents...

...difficulty in the routine of these vibrios which, other than the O
type-1 cholera vibrio, are loosely termed 'non-agglutinating' of NAG
vibrios. A phenol-induced slide-agglutination (PH) test has been devised
(Sil and Bhattacharyya, 1979) which exploits the common flagellar
antigens that are species specific and diagnostic for this and other
species of *Vibrio* (Bhattacharyya, 1975). The PH test on 53
isolates of *V. cholerae* (39 NAG and 14 of O type 1) gave reliable
results by...

...5% phenol; 45 cultures of non-*V. cholerae* were negative by this test. In
older isolates the test was sometimes atypical and required the use
of modified phenol-agglutination procedures (Sil and Bhattacharyya, 1979).
Phenol appears to act on the cell membrane to expose the
flagellar antigen which is masked in the living vibrio
(Bhattacharyya, 1977). During 1977, the PH test was used in the WHO
Collaborative Center for...

...Istituto Superiore di Sanita, Rome (ISS) to assess its performance in
routine use with recent isolates from a wide variety of human
environmental sources. The test was also applied to older...

MEDICAL DESCRIPTORS:

*antigen antibody reaction; *flagellum; *vibrio cholerae

ORIGINAL DESCRIPTORS:

17/3, K/19 (Item 2 from file: 73)

DIALOG(R) File 73: EMBASE

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0065507102 EMBASE/ Medline No: 7141690

Effect of chemical and heat inactivation on the antigenicity and immunogenicity of *Vibrio cholerae*.

Gryz Jr. S.J.; Furer E.; Germanier R.

CORRESP. AUTHOR/ AFFILI: Gryz S.J.

Infection and immunity (Infect. Immun.) (United States) October 1, 1982, 38/ 1 (21-26)

ISSN: 0019-9567

DOCUMENT TYPE: Journal; Article RECORD TYPE: Abstract

FILE SEGMENT: Medline

LANGUAGE: English

Effect of chemical and heat inactivation on the antigenicity and immunogenicity of *Vibrio cholerae*.

The effects of heat and chemical inactivation on the antigenicity and immunogenicity of *Vibrio cholerae* 1418 in rabbits were studied. *V. cholerae* 1418 was inactivated with heat and chemical inactivants (phenol or Formalin) alone or in combination. Enzyme-linked immunoassay systems employing whole cells of *V. cholerae* 1418, lipopolysaccharide, or flagella as immobilized antigens were used to measure the antibody response (immunoglobulins G and M) after parenteral immunization of rabbits with various inactivated whole-cell preparations. The "classical" whole-cell vaccine, produced by phenol treatment, was found to be a comparatively poor immunogen. When Formalin was used instead of phenol, the antibody response to all three enzyme-linked immunosorbent assay antigens was greatly increased. Immunoglobulin G titers to intact *V. cholerae* cells were as much as 100-fold higher in rabbits immunized with the Formalin-inactivated preparation as compared to the classical phenol-inactivated vaccine. Furthermore, antibody produced against the Formalin-inactivated preparation was capable of recognizing antigenic determinants expressed on the cell surface of several heterologous strains of *V. cholerae*. These results indicate that the antigenicity and immunogenicity of *V. cholerae* are greatly affected by the inactivation conditions employed for vaccine production and ...

DRUG DESCRIPTORS:

*bacterial antigen; *bacterium antibody; *cholera vaccine
formaldehyde--pharmacology--pd; immunoglobulin G;
immunoglobulin M; lipopolysaccharide; live vaccine; membrane
antigen; phenol; phenol derivative--pharmacology--pd

MEDICAL DESCRIPTORS:

**Vibrio cholerae*
animal; article; biosynthesis; comparative study; flagellum; heat;
immunology; rabbit; vaccination
CAS REGISTRY NO.: 50-00-0 (formaldehyde); 97794-27-9 (immunoglobulin G); 9007-85-6 (immunoglobulin M); 108-95-2...

17/3, K/20 (Item 1 from file: 155)

DIALOG(R) File 155: MEDLINE(R)

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07355510 PM D: 6363898 Record Identifier: PMC281589; 023426; 00135629

New knowledge on pathogenesis of bacterial enteric infections as applied to vaccine development.

Levine MM; Kaper JB; Black RE; Clements ML

Microbiological reviews (UNITED STATES) Dec 1983, 47 (4) p510-50, ISSN 0146-0749--Print 0146-0749--Linking Journal Code: 7806086

Publishing Model Print; Cites Am J Pathol. 1967 Jan; 50(1): 109-36 PM D

5334433; Cites Jpn J Med Sci Biol. 1968 Aug;21(4):259-73 PM D 4884612; Cites Bull World Health Organ. 1968;39(3):375-80 PM D 5303905; Cites Bull World Health Organ. 1966;34(3):321-39 PM D 5296393; Cites J Bacteriol. 1966 Jan;91(1):69-75 PM D 5323299; Cites Arch Pathol. 1966 Jun;81(6):501-8 PM D 5327124; Cites Jpn J Microbiol. 1975 Apr;19(2):163-6 PM D 807763; Cites J Clin Invest. 1975 Mar;55(3):551-60 PM D 803978; Cites Bull World Health Organ. 1965;32(5):647-55 PM D 5294180; Cites Acta Pathol Microbiol Scand B. 1975 Feb;83(1):31-6 PM D 1093354; Cites N Engl J Med. 1975 May 15;292(20):1041-5 PM D 1091855; Cites Infect Immun. 1975 May;11(5):890-7 PM D 1091563; Cites J Exp Med. 1975 Dec 1;142(6):1509-19 PM D 1104748; Cites Infect Immun. 1975 Sep;12(3):656-67 PM D 1100526; Cites J Infect Dis. 1976 Feb;133(2):153-6 PM D 1107438; Cites J Pediatr. 1976 Jul;89(1):8-10 PM D 778368; Cites Am J Epidemiol. 1976 Jul;104(1):88-92 PM D 779465; Cites N Engl J Med. 1976 Jun 10;294(24):1299-305 PM D 772435; Cites Med Microbiol Immunol. 1976 Jun 1;162(2):73-80 PM D 778571; Cites Zentralbl Veterinarmed B. 1976 Feb;23(1):79-88 PM D 769429; Cites Infect Immun. 1976 Jul;14(1):232-39 PM D 985804; Cites Infect Immun. 1976 Jan;13(1):195-203 PM D 1248870; Cites Trans R Soc Trop Med Hyg. 1971;65(6):815-8 PM D 5157442; Cites Am J Gastroenterol. 1970 Mar;53(3):234-45 PM D 5435635; Cites Zentralbl Bakteriolog Orig. 1967;203(3):295-9 PM D 5633594; Cites J Exp Med. 1966 Oct 1;124(4):601-19 PM D 5922286; Cites Am J Pathol. 1965 Dec;47(6):1011-44 PM D 5844378; Cites J Exp Med. 1966 Oct 1;124(4):573-83 PM D 5922285; Cites Am J Dig Dis. 1966 Aug;11(8):615-24 PM D 5943767; Cites J Infect Dis. 1968 Jun;118(3):293-306 PM D 5668032; Cites Lancet. 1967 Nov 18;2(7525):1056-9 PM D 4168536; Cites Arch Pathol. 1969 Jun;87(6):556-62 PM D 4889912; Cites N Engl J Med. 1970 Oct 1;283(14):739-46 PM D 4916916; Cites N Engl J Med. 1970 Sep 24;283(13):686-91 PM D 4916913; Cites J Infect Dis. 1974 Oct;130(4):374-9 PM D 4374475; Cites Infect Immun. 1971 Dec;4(6):663-73 PM D 4949507; Cites J Infect Dis. 1974 Feb;129(2):117-23 PM D 4129825; Cites Acta Pathol Microbiol Scand A. 1971;79(2):109-22 PM D 4102676; Cites Lancet. 1974 Dec 7;2(7893):1370-4 PM D 4143328; Cites J Infect Dis. 1967 Feb;117(1):101-7 PM D 4165395; Cites Infect Immun. 1975 Dec;12(6):1290-4 PM D 54336; Cites Infect Immun. 1976 Mar;13(3):735-40 PM D 1270131; Cites Bull World Health Organ. 1975;52(3):323-30 PM D 779998; Cites J Infect Dis. 1976 Apr;133(4):424-9 PM D 1262709; Cites Dev Biol Stand. 1976;33:108-12 PM D 782960; Cites Gastroenterology. 1976 Jun;70(6):1085-90 PM D 178569; Cites J Infect Dis. 1975 May;131(5):553-8 PM D 1092768; Cites Infect Immun. 1976 Jul;14(1):246-56 PM D 780274; Cites Infect Immun. 1976 Jul;14(1):240-5 PM D 985805; Cites Infect Immun. 1974 Feb;9(2):348-53 PM D 4205947; Cites Infect Immun. 1973 Dec;8(6):851-9 PM D 4206342; Cites Jpn J Microbiol. 1974 Jul;18(4):321-6 PM D 4610242; Cites Acta Microbiol Acad Sci Hung. 1974;21(1-2):193-6 PM D 4613135; Cites Acta Microbiol Acad Sci Hung. 1974;21(1-2):187-91 PM D 4613134; Cites Acta Microbiol Acad Sci Hung. 1974;21(1-2):181-5 PM D 4613133; Cites Acta Microbiol Acad Sci Hung. 1974;21(1-2):109-14 PM D 4613128; Cites Lancet. 1976 May 22;1(7969):1132 PM D 57542; Cites Lancet. 1976 Mar 20;1(7960):629-31 PM D 55904; Cites J Infect Dis. 1973 Mar;127(3):261-70 PM D 4631877; Cites Infect Immun. 1972 Feb;5(2):191-8 PM D 4628955; Cites J Clin Invest. 1973 Feb;52(2):441-53 PM D 4630603; Cites J Infect Dis. 1973 Jul;128(1):69-75 PM D 4577975; Cites J Infect Dis. 1972 Nov;126(5):551-64 PM D 4581834; Cites Arch Roum Pathol Exp Microbiol. 1973 Mar;32(1):35-44 PM D 4585403; Cites Acta Microbiol Acad Sci Hung. 1972;19(3):175-86 PM D 4594981; Cites Digestion. 1973;9(2):166-75 PM D 4589323; Cites J Infect Dis. 1974 May;129(5):577-82 PM D 4595989; Cites J Exp Med. 1974 May 1;139(5):1189-203 PM D 4596512; Cites Infect Immun. 1972 May;5(5):792-7 PM D 4564882; Cites Infect Immun. 1972 Apr;5(4):622-4 PM D 4564682; Cites Nature. 1973 Apr 20;242(5399):531-2 PM D 4573477; Cites Infect Immun. 1972 Aug;6(2):104-11 PM D 4569915; Cites Infect Immun. 1972 Oct;6(4):451-8 PM D 4564282; Cites Acta Microbiol Acad Sci Hung.

1972; 19(1):19-28 PM D 4568432; Gites J Infect Dis. 1974 Jul; 130(1):40-9 PM D 4601180; Gites J Pediatr. 1974 Jun; 84(6):803-6 PM D 4596999; Gites J Infect Dis. 1972 Jan; 125(1):5-11 PM D 4550417; Gites J Infect Dis. 1972 Jan; 125(1):12-6 PM D 4550416; Gites Am J Epidemiol. 1972 Jul; 96(1):40-9 PM D 4557072; Gites J Clin Invest. 1972 May; 51(5):1212-8 PM D 4560429; Gites N Engl J Med. 1975 May 1; 292(18):933-6 PM D 163964; Gites Gastroenterology. 1975 Dec; 69(6):1230-7 PM D 172398; Gites J Infect Dis. 1972 Jun; 125(6):647-55 PM D 5037016; Gites N Engl J Med. 1971 Jul 1; 285(1):1-9 PM D 4996788; Gites Bull World Health Organ. 1971; 45(4):457-64 PM D 4948417; Gites Arch Pathol. 1966 Sep; 82(3):272-9 PM D 4957636; Gites Proc Soc Exp Biol Med. 1967 Jun; 125(2):347-9 PM D 4961488; Gites J Med Microbiol. 1971 Aug; 4(3):301-5 PM D 4940299; Gites J Med Microbiol. 1971 Nov; 4(4):467-85 PM D 4944321; Gites Zentralbl Bakteriол Orig. 1969; 211(4):476-85 PM D 4916988; Gites J Bacteriol. 1967 Feb; 93(2):740-8 PM D 5335971; Gites Infect Immun. 1979 Aug; 25(2):586-96 PM D 39893; Gites Infect Immun. 1979 Jul; 25(1):121-6 PM D 39031; Gites Proc Natl Acad Sci U S A. 1978 Jun; 75(6):2800-4 PM D 26915; Gites Infect Immun. 1979 Jun; 24(3):887-94 PM D 223988; Gites N Engl J Med. 1976 Dec 30; 295(27):1520-1 PM D 186708; Gites Infect Immun. 1979 Jul; 25(1):27-33 PM D 157980; Gites Proc Natl Acad Sci U S A. 1979 Apr; 76(4):2052-6 PM D 109838; Gites Infect Immun. 1979 Oct; 26(1):110-7 PM D 115794; Gites J Infect Dis. 1977 Sep; 136(3):416-21 PM D 409782; Gites Infect Immun. 1979 Sep; 25(3):863-72 PM D 387597; Gites Infect Immun. 1979 Jun; 24(3):879-86 PM D 381204; Gites Infect Immun. 1979 Jun; 24(3):611-6 PM D 381196; Gites Clin Gastroenterol. 1979 Sep; 8(3):737-65 PM D 387302; Gites Infect Immun. 1979 Apr; 24(1):19-23 PM D 378842; Gites Infect Immun. 1979 Mar; 23(3):729-36 PM D 378834; Gites Infect Immun. 1979 Feb; 23(2):325-9 PM D 370013; Gites J Infect Dis. 1979 Jul; 140(1):114-8 PM D 379245; Gites Pediatr Clin North Am 1979 May; 26(2):433-43 PM D 379783; + TJ: MICROBIOLOGICAL REVIEWS.

Document type: Journal Article; Review

Languages: ENGLISH

Main Citation Owner: NLM

Other Citation Owner: NLM; PIP; POP

Abstract Source: PIP

Record type: MEDLINE; Completed

... on the basis of their degree of ultimate invasiveness after ingestion by a susceptible host: mucosal adherence and enterotoxin production; mucosal adherence and brush border dissolution -- enteropathogenic E. coli (EPEC) of "classical" serotypes; mucosal invasion and intraepithelial cell proliferation; mucosal translocation followed by bacterial proliferation in the lamina propria and mesenteric lymph nodes; and mucosal translocation followed by generalized infection. The review covers cholera (motility and chemotaxis, mucosal adhesion, flagellar sheath protein, hemagglutinins, outer membrane proteins, enterotoxin production, quality and duration of infection derived immunity, immune response in humans, LPS, flagellar sheath protein, cholera lectin, other cholera hemagglutinins, outer membrane protein, previous cholera vaccines, killer whole cell vaccines, toxoids, combination vaccines, attenuated versus cholerae vaccines): enterotoxigenic Escherichia coli (ETEC) (enterotoxins, O:H serotypes and enterotoxin phenotypes, colonization factors, immune response in humans, vaccines against ETEC, and toxoids); EPEC (vaccines against EPEC); Shigella (smooth LPS O antigen, epithelial cell invasiveness, Shigella toxin, and Shigella vaccines); and typhoid fever (vaccines against typhoid fever...

... available information leads to the conclusion that an oral vaccine consisting of a combination of antigens, intending to stimulate both antibacterial and antitoxic immunity, would be most likely to succeed. Current approaches to immunoprophylaxis of ETEC infection involve vaccines that stimulate antitoxic or antiadhesion immunity or

both by means of killed antigens or attenuated strains. It is likely that the most effective vaccines will contain appropriate antigens intended to simultaneously stimulate both antibacterial and antitoxic immunity, thereby leading to a synergistic protective effect. Now that the special enteroadhesive properties of EPEC...

... be associated with a plasmid, it should be possible to identify the phenotypic gene products responsible for this phenomenon. It is likely that fimbriae or outer membrane proteins will prove to be the organelle of adhesion. When such information becomes available, it should be possible to prepare oral vaccines consisting of the purified antigen. Efficacy has been shown for attenuated *Shigella* strains utilized as oral vaccines. The major thrust in the development of new immunization agents against typhoid fever is to identify immunizing agents at least equal in efficacy to the parenteral acetone killed vaccine but which cause...

... Descriptors: prevention and control--PC; *Escherichia coli Infections--prevention and control--PC; *Gastrointestinal Diseases--microbiology--M; *Immunotherapy; Bacteria--immunology--IM; Escherichia coli--immunology--IM; Gastrointestinal Diseases--prevention and control--PC; Humans; *Vibrio cholerae*--immunology--IM

... Identifiers: Fungal Diseases; *Biology; *Clinical Research; *Delivery Of Health Care; *Diseases; *Economic Factors; *Health; *Health Services; *Immunity; *Immunization; *Infections; *Literature Review; *Medicine; *Physiology; *Preventive Medicine; *Primary Health Care; *Research And Development; *Research Methodology...

17/3, K/21 (Item 2 from file: 155)
 DI ALOG(R) File 155: MEDLINE(R)
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04773973 PM D: 4823423 Record Identifier: PMC380038

Antibody responses in rabbits to injections of whole cell, flagella, and flagellin preparations of cholera and noncholera vibrios.

Smith H L

Applied microbiology (UNITED STATES) Feb 1974, 27 (2) p375-8, ISSN 0003-6919--Print 0003-6919--Linking Journal Code: 7605802
 Publishing Model Print; Cites Aust J Exp Biol Med Sci. 1964 Jun;42:267-82 PM D 14165005; Cites Jpn J Med Sci Biol. 1970 Feb;23(1):13-20 PM D 5310994

Document type: Comparative Study; Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Other Citation Owner: NLM

Record type: MEDLINE; Completed

Antibody responses in rabbits to injections of whole cell, flagella, and flagellin preparations of cholera and noncholera vibrios.

Sera prepared by the injection of living cells, killed cells, flagella, or flagellins of vibrios into rabbits were examined for antibodies which cross-reacted with cholera and noncholera vibrio strains. Antisera to *Vibrio cholerae* strains agglutinated heterologous *V. cholerae* strains. They did not agglutinate strains of noncholera vibrios. Sera to noncholera strains agglutinated homologous strains only. There was no evidence that a common antigen was present in the organisms tested. The proposal for a "cholera group of vibrios" based upon sharing of an H antigen between cholera and some noncholera vibrios is held as untenable. It is indicated, however, that...

Descriptors: *Antibody Formation; *Antigens, Bacterial; *Bacterial Proteins; *Flagella--immunology--IM; *Vibrio--immunology--IM

10585880VI BRI O.txt
gy--IM; *Vibrio cholerae--immunology--IM; Agglutination
Tests; Agglutinins--analysis--AN; Animals; Cross Reactions; Formaldehyde
--pharmacology--PD; Immunization; Injections; Intravenous;
Injections, Subcutaneous; Mercury--pharmacology--PD; Rabbits;
Vibrio--drug effects--DE; Vibrio cholerae--drug effects--DE
Chemical Name: Agglutinins; Antigens, Bacterial; Bacterial Proteins
; Formaldehyde; Mercury

17/3, K/22 (Item 1 from file: 162)
DIALOG(R) File 162: Global Health
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0004592852 CAB Accession Number: 19962003615
Safety, immunogenicity, and efficacy of live attenuated
Vibrio cholerae O139 vaccine prototype.
Coster, T. S.; Killeen, K. P.; Waldor, M. K.; Beattie, D. T.; Spriggs,
D. R.; Kenner, J. R.; Trofa, A.; Sadoff, J. C.; Mekalanos, J. J.; Taylor,
D. N.
Clinical Studies Branch, Medical Division, US Army Medical Research
Institute of Infectious Diseases, Fort Detrick, Frederick, MD 21702-5011,
USA.
Lancet (British edition) vol. 345 (8955): p. 949-952
Publication Year: 1995
ISSN: 0140-6736
Language: English
Record Type: Abstract
Document Type: Journal article

Safety, immunogenicity, and efficacy of live attenuated
Vibrio cholerae O139 vaccine prototype.

A new strain of cholera vibrio, designated either serotype Bengal
or serogroup O139, has caused epidemics in India and Bangladesh [and other
countries bordering on, or near to, the Bay of Bengal]. From
isolates of this Bengal organism vaccine strains were produced by
deleting multiple copies of the cholera...

... No diarrhoea occurred in 4 volunteers who received strain Bengal-15, a
stable spontaneous non-motile derivative of Bengal-3. The authors
speculate that lack of motility may prevent the vibrios from
penetrating the mucous layer of the epithelium to promote secretion
by the enterocytes. In a second study, 10...

... natural disease. Their suggestion, that a bivalent vaccine might protect
against all forms of cholera vibrio, seems to accept that Bengal
vaccine would not protect against the other pandemic serotypes, Inaba...

... these two serotypes they would select for a bivalent vaccine.
[Previous evidence of type-specific immunity against Inaba and Ogawa
infections indicates that the present requirement is for a trivalent
vaccine to give a balanced response to its Bengal, Inaba and Ogawa
components.]

... DESCRIPTORS: immune response; ...
... immunization;
... IDENTIFIERS: immune sensitization...

... immunity reactions...

... immunological reactions
... ORGANISM DESCRIPTORS: Vibrio cholerae
BROADER TERMS: Vibrio;

... CABI CODES: Host Resistance and Immunity (HH600)

17/3, K/23 (Item 1 from file: 369)
 DI ALOG(R) File 369: NEW SCIENTIST
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00128400 16922744.100 (USE FORMAT 7 OR 9 FOR FULLTEXT)
 The freelance poisoner
 FURLOW BRYANT; New Mexico ; Bryant Furlow is a science writer based in New Mexico
 New Scientist, vol. 169, no. 2274, p. 30
 January 20, 2001
 LANGUAGE: English RECORD TYPE: Fulltext DOC. TYPE: Journal
 WORD COUNT: 2401

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:

...dead that some believe gives birth to Haitian zombies.
 The Livermore team estimated that to extract the 90 milligrams of TTX discovered by the Feds, you'd need between 45 and...

...clear warning that predators ignore at their peril.
 The newt's powerful toxin was first isolated in the 1960s by Stanford University chemist Harry Mosher and his graduate student Melancton Brown...
 ...poison. In honour of the donor animals, the researchers named the crude concentrate that they extracted tarichatoxin. But not long after the discovery, Mosher found out that their new toxin was in fact identical to a molecule that had already been described--a toxin isolated from pufferfish and known as fugu poison or TTX.
 In the late 1970s, maculotoxin--the...

...Academy of Sciences, calls it "one of nature's strangest molecules".
 Three nitrogen atoms are responsible for the TTX molecule's awesome body count. Together, they form what is known as...

...TTX molecules clog the channels, blocking the rapid flooding of sodium ions across the cell membrane that normally propagates nerve impulses.

A victim of fugu poisoning, or a swimmer bitten by...infamous climb up the food chain, they argued, TTX travels through a network of TTX-immune life forms that feed upon one another, becoming more concentrated in the tissue of each...

...and found their own new strain. They have preliminarily identified the new bug as a Vibrio species--the same genus of microbes that carries cholera. When tended in a Petri dish, the microbe--which they named Vibrio LM-1--also produced TTX. "This study revealed for the first time that a Vibrio strain from the highly toxic wild pufferfish produced TTX," says Lee.

Researchers have yet to...

...Ritchie team found perpetrating a sea-urchin massacre in the Antilles. "Lee and colleagues probably isolated Pseudoalteromonas," says Smith. He points out that the Korean team did not use genetic sequence data to identify the strain as a Vibrio species, relying instead upon physical and biochemical characteristics for identification. "If their 'Vibrio' isolate was [genetically] sequenced, I suspect that it would actually be a Pseudoalteromonas," he says.
 Even...

...species of bacteria carry TTX genes would not be terribly surprising. For one thing, the *Vibrio* and *Pseudoalteromonas* genera are closely related. In addition, bacterial genomes are highly promiscuous, containing amalgams...

...s previous victims. It is precisely this process that gave a previously innocuous strain of *Vibrio* bacterium the power to transmit cholera.

Mosher clearly got the microbe part right. But are...
...tests," he says. Of course, it's possible that TTX might help bacteria fight the immunological defences of animals such as the hapless sea urchins. Nobody knows for sure.

Peter Anderson that TTX is just a spectacular by-product of mundane bacterial metabolism. Many *Vibrio* bacteria manipulate sodium gradients across cell membranes to fuel the rotor-like flagella that allow them to scoot around. If Anderson is right, the poison's vicious effects...

...apparently create their living-dead slaves by means of a powder containing, among other things, extract of pufferfish. Many opposed Davis's views, however, and even if he is right, zombie...

...and others share his concern. Smith points out that TTX-producing bacteria are easier to isolate and grow than some microbes that are already feared as potential agents of bioterrorism, including...

References and Notes:

Further reading: A tetrodotoxin-producing *Vibrio* strain, LM-1 by Myoung-Ja Lee and others, *Applied and Environmental Microbiology*, vol 66
...

17/3, K/24 (Item 2 from file: 369)
DI ALOG(R) File 369: NEW SCIENTIST
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00101865 14319337.100 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Waterborne diseases
JONES, KEITH
New Scientist, vol. 143, no. 1933, p. Page 1
July 9, 1994
LANGUAGE: English RECORD TYPE: Fulltext DOC. TYPE: Journal
WORD COUNT: 3316

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT: ... FIGURE OMITTED)

Waterborne diseases are a major cause of illness in developing countries and are responsible for sporadic and localised outbreaks of disease in the developed world. They are generated by...

...have little access to medicines. Children and the elderly are also especially vulnerable, because their immune systems are either undeveloped or worn out. Anyone who is suffering from a disease that damages the immune system will also be in particular danger. Cholera and typhoid were widespread in Europe and...the organism and ranges from 200 cells for *Shigella* to 10 SUP 6 cells for *Vibrio cholerae*. The bacteria must first withstand the acid produced by the stomach. They are more...

...high enough and nutrients are available (as in organic-rich effluents and in phytoplankton blooms). *Vibrio cholerae* manages to keep alive over winter in brackish estuarine and inshore coastal waters, and...

...survival of *V. cholerae* and *L. pneumophila*, which can grow in water. The main factors responsible for the death of bacteria and viruses in water is sunlight and salinity. Microbiologists find suffering diarrhoea. 1: Some dangerous enemies (A) Diarrhoeal families *Salmonella typhi*, which is responsible for typhoid fever, crosses from the intestine into the blood and lymph systems where it...

...of victims die. The main reservoirs of infection are the human intestine and gall bladder. *Vibrio cholerae*, the cause of cholera, produces a toxin, cholera toxin, which although it does not kill...

...other enteric bacteria are important waterborne causes of diarrhoea in young children. They are also responsible for many cases of so-called "travellers' diarrhoea". In the developed world they are mainly...
...*Giardia lamblia*, which is the cause of an unpleasant long-lasting diarrhoea (giardiasis), is a flagellate protozoan, and the most common protozoal parasite reported worldwide. It lives in the small intestine...

...parvum is of increasing concern to the water industry in developed countries and has been responsible for extensive outbreaks. On ingestion, the oocysts release sporozoites that grow and infect enterocytes in...

...anorexia. Viruses THERE ARE six groups of viruses that cause gastroenteritis and all have been isolated from contaminated drinking water and recreational waters. They are: rotaviruses, Norwalk-like agents, caliciviruses, astroviruses...

...Wells' disease. It is acquired through cuts and abrasions as well as via the mucous membranes. The symptoms are normally flu-like and the patient recovers quickly. In severe cases...

References and Notes:

17/3, K/25 (Item 1 from file: 370)
DIALOG(R) File 370: Science
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00501314 (USE 9 FOR FULLTEXT)
Exploitation of Mammalian Host Cell Functions by Bacterial Pathogens
Finlay, B. Brett; Cossart, Pascale
B. B. Finlay, Biotechnology Laboratory, University of British Columbia, Vancouver, B.C., Canada, V6T-1Z3. E-mail: bfinlay@unixg.ubc.ca ; P. Cossart, Unite des Interactions Bacteries-Cellules, Institut Pasteur, 75724 Paris Cedex 15, France. E-mail: pcossart@pasteur.fr
Science Vol. 276 5313 pp. 718
Publication Date: 5-02-1997 (970502) Publication Year: 1997
Document Type: Journal ISSN: 0036-8075
Language: English
Section Heading: Articles
Word Count: 7193

(THIS IS THE FULLTEXT)

...Text: *Helicobacter pylori*. And old diseases, such as tuberculosis, have returned with a vengeance, particularly in immunocompromised patients, accompanied by the emergence of antibiotic-resistant strains. No new class of antibiotic has...include all nonpilus adhesins (B1). Examples include the adhesins AfaD and AfaE from *Escherichia coli*, responsible for attachment of *E. coli* to the urinary tract or the intestinal cells, and the filamentous hemagglutinin (FHA) from *Bordetella pertussis*,

responsible for attachment to the lung epithelial and phagocytic cells. Afimbrial adhesins also include the opacity proteins (Opa) from *Neisseria*, which comprise a family of similar proteins responsible for cell-type specificity, and the repeat proteins of Gram-positive bacteria such as the...

...mannose residues on cell surfaces. *Helicobacter pylori* binds to the Lewis^x blood group antigen, which is expressed on cells in the stomach epithelium (B6). *Neisseria* binds to cell surface...

...not simply functioning as an inert surface. Indeed, some bacterial pathogens rely on a host response to infection to trigger expression of a target receptor that the bacteria then bind to...

...of the endothelial cells by thrombin or tumor necrosis factor α , two factors produced in response to infection (B8). The pneumococcus has a cell wall component, phosphorylcholine, that binds to the...

...host cells by inducing calcium flux, inositol phosphate production, tyrosine phosphorylation of a 90-kD membrane protein, and ultimately, cytoskeleton rearrangements. EPEC must activate these host signal transduction pathways to attach... signaling, with the actin cytoskeleton providing the necessary force to internalize the particle into a membrane-bound vacuole. However, invasive bacteria seem to have evolved two major types of induced uptake...

...and a "trigger" mechanism in which bacteria send signals to the cell to induce dramatic membrane ruffling and cytoskeletal rearrangements that result in macropinocytosis and virtually passive entry of bacteria (Fig. 1).

...bacteria, both *Shigella* and *Salmonella* stimulate major rearrangements of cellular actin that result in large membrane projections similar to "membrane ruffles" induced by some growth factors or oncogenes. The process culminates in bacterial uptake through the formation of a membrane-bound vacuole, which in the case of *Shigella* is subsequently lysed (Fig. 1) (B15).

...invasion, colocalizing with the site of entry. Transient overexpression of Src in transfected cells induces membrane ruffles and mediates entry of noninvasive *Shigella* mutants, strongly suggesting a role for this kinase...

...central role in mediating bacterial uptake, possibly by bundling newly formed actin filaments in the membrane extensions (B15). Another actin-binding protein, vinculin, colocalizes to the site of entry and can...

...major rearrangements of the actin cytoskeleton upon receptor stimulation or other stimulation lead to either membrane ruffling, filopodia formation, or actin stress fiber formation. These rearrangements are controlled by specific small... delivering them to underlying macrophages. By targeting this cell type, which is used by the immune system to sample antigens from the intestine, *Shigella* can cross the epithelium to invade the basolateral surface of enterocytes...

...cells once the cell junctions have been opened up by the migration of neutrophils in response to the presence of *Shigella* on the apical face of colonic cells (B19). Thus, both the...

...invasion system is that of *Yersinia* species. *Yersinia enterocolitica* and *Y. pseudotuberculosis* have an outer membrane protein, invasin, that mediates attachment and entry into epithelial cells. By binding tightly to a...

...on cell surfaces, invasion mediates bacterial uptake through a zipperlike mechanism, zippering the host cell membrane around the bacterium as it enters (Fig. 2) (B20). Host signal transduction mechanisms are used...

...and threonine kinases and like YopH is targeted to the inner surface of the plasma membrane of the eukaryotic cell...protein interactions. The C-terminal region of internalin contains an LPXTG motif preceding a hydrophobic membrane-spanning region. The LPXTG motif (L, Leu; T, Thr; G, Gly) permits covalent linkage of...

...host functions continues when bacterial pathogens become intracellular parasites. Nearly all invasive bacteria enter a membrane-bound vacuole as part of their invasion process, but their subsequent fates vary. Certain bacteria...into both phagocytic and nonphagocytic cells by macropinocytosis. They often reside in the resulting large membrane-bound vacuoles (spacious phagosomes), and they express several gene products that enhance intracellular survival by...

...A general theme among pathogens that remain within membrane-bound vacuoles is their ability to avoid fusion with lysosomes, although the mechanisms used to...

...compartment, thereby avoiding the process of development into lysosomes. The vacuolar adenosine triphosphatase, which is responsible for acidifying vesicles, is not incorporated into the membranes of intracellular *M. avium*-containing vacuoles...

...pneumophila, the causative agent of Legionnaires' disease, also inhabits a unique intracellular niche within a membrane-bound vacuole. It enters phagocytes by an unusual phagocytic mechanism called "coiling phagocytosis," during which...

...target the vacuole to become a lysosome. The development of new techniques, such as the isolation of vacuoles containing intracellular pathogens and the use of confocal microscopy to label vacuolar membranes...

...they replicate. In the case of *Shigella*, the bacterial factor used to breach the vacuolar membrane is IpaB, one of the secreted proteins used to invade cells, but the mechanism of lysis is unknown (B35). *Listeria* use a pore-forming toxin, listeriolysin O. This potent membrane-damaging toxin, when expressed in *Bacillus subtilis*, is sufficient to allow this soil organism to...

...the bacterium indicating that actin polymerization was initiated at the bacterial surface. Bacterial actin-based motility has no connection with bacterial chemotaxis; rather, it is highly reminiscent of other cellular actin-based motility events, such as the migration of neutrophils toward a site of infection or metastasis of these cellular events remains elusive, explaining why bacterial motility, when discovered, received a great deal of attention because it provides simplified and genetically manipulatable...

...Actin-based motility is mediated by a single bacterial protein: ActA in the case of *Listeria* and IcsA...

...by a central region made of proline-rich repeats. IcsA is an 120-kD outer membrane protein that also has a region of repeats, albeit glycine-rich. One interesting feature of...

...studied for ActA and has been tackled using cell-free systems (such as *Xenopus* egg extracts or platelet extracts) that support actin-based bacterial motility. Genetic analysis has revealed that the NH₂-terminal portion of ActA is necessary...

...filaments. This is supported by the observation that bursts of actin polymerization inside cells in response to stimuli can result from the transient appearance of free barbed ends, resulting either from...

...are engulfed by phagocytic cells. For *Shigella* and *Listeria*, an important consequence of actin-based motility is direct spreading to neighboring cells. On reaching the plasma membrane, these bacteria induce the formation of protrusions that invaginate into the neighboring cell, resulting in the formation of a two-membrane vacuole containing the bacterium. After vacuole lysis, the bacterium starts a new cycle of infection...three groups according to their site of action (B45). (i) Toxins acting at the plasma membrane, where they interfere with transmembrane signaling pathways. This group includes the *E. coli* heat-stable...

...which acts directly on the transmembrane guanylate cyclase of intestinal cells. (ii) Toxins that alter membrane permeability, such as pore-forming toxins of the streptolysin *O*/listeriolysin *O* family, the toxin...

...*Salmonella typhimurium* also induces apoptosis in macrophages. Mutants that are unable to induce host cell membrane ruffling or to express the type III protein secretion system that is used to invade...cells. Studies in vitro have demonstrated that apoptosis also takes place in cultured dendritic cells (antigen-presenting cells present in the lamina propria of the mouse intestine) and is mediated by...

...apoptosis in vitro (B51). Indeed, the induction of apoptosis in cells directly involved in the immune response, as shown in the case of TSST1 from *Staphylococcus aureus*, which induces B cell apoptosis and inhibits immunoglobulin G production (B51), may be of considerable benefit for the incoming microbe...The issue of interbacteria competition also needs to be addressed: As a pathogen colonizes a mucosal surface, it is usually in competition with the normal flora, and even with other pathogens. Finally, integration of host genetics, physiology, and immune system, which play critical roles in the outcome of infection, is necessary for a full...

...live attenuated vaccine strain, and even to use it to express and deliver heterologous cloned antigens. Knowledge of where the pathogen targets are in the body and the ensuing host immune response to these infections provides additional opportunities for vaccine development; for example, pathogens that target mucosal surfaces are being used to develop mucosal vaccines...cells

Yersinia species	urinary tract infections	
	Plague, mesenteric	Adherence to cells
	lymphadenitis, diarrhea	and matrix
Vibrio cholerae	Cholera	Adherence to
cells		
Intracellular pathogens		
Macrophages		
Legionella pneumophila	Legionnaires' disease	Within a vacuole...

... Figure F1

Caption: Bacterial interactions with cultured mammalian cells. (A) Phosphotyrosine immunofluorescence staining (red) was overlaid on a phase contrast micrograph of HeLa cells infected with enteropathogenic *E. coli* (EPEC). (B) An immunofluorescence micrograph of actin (red) in Madin Darby canine kidney (MDCK) epithelial cells infected with *Salmonella*...

...exocytosis

UDP- glycosyl - transferase
Reference B56

F- actin di sorganization

Cell shape changes

Deamidase Reference B57

Membrane ruffling,
actin polymerization

Footnote:
(-),

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17/3, K/26 (Item 1 from file: 35)
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PRODUCTION AND EVALUATION OF RAPID SEROLOGICAL DETECTION METHODS FOR
IDENTIFICATION OF VIBRIO VULNIFICUS AND VIBRIO CHOLERAE
Author: SIMONSON, JANET GIBSON
Degree: PH.D.
Year: 1988
Corporate Source/Institution: THE LOUISIANA STATE UNIVERSITY AND
AGRICULTURAL AND MECHANICAL COL. (0107)
Source: VOLUME 50/05- B OF DISSERTATION ABSTRACTS INTERNATIONAL.
PAGE 1842. 66 PAGES

PRODUCTION AND EVALUATION OF RAPID SEROLOGICAL DETECTION METHODS FOR
IDENTIFICATION OF VIBRIO VULNIFICUS AND VIBRIO CHOLERAE
Descriptors: HEALTH SCIENCES; IMMUNOLOGY; MICROBIOLOGY

Species within the genus *Vibrio* can be identified serologically through detection of species specific H antigens expressed in the core protein of the polar flagella. Cholera vibrios also exhibit a specific cell wall polysaccharide antigen (A). Antibody reactive with these specific antigens can be employed for the rapid serological identification of *Vibrio* isolates. Species-specific anti-H sera were produced in rabbits immunized with flagellar core protein prepared from *V. vulnificus*. A coagglutination reagent was constructed by arming *S. aureus* Cowan I cells with the anti-*V. vulnificus* flagellar antibody. The reagent coagglutinated 99.3% of isolates identified bacteriologically as *V. vulnificus* and, other than *V. pelagius*, did not agglutinate 19 heterologous *Vibrio* species tested. In addition, monoclonal antibodies (Mabs) reactive with the flagellar core protein of either *V. cholerae* or *V. vulnificus* were produced and used to make coagglutination reagents. *Staphylococcus*

aureus cells armed with Mab specific for V. cholerae flagellar core protein coagglutinated V. cholerae and V. mimicus isolates exclusively and did not react with 30 heterologous Vibrio species tested. These results suggest that V. cholerae and V. mimicus express similar H determinants. Latex beads armed with Mab reactive with V. vulnificus flagellar cores coagglutinated only V. vulnificus among 32 Vibrio species tested. The anti-H coagglutination tests represent a rapid, serologically specific, and inexpensive method for identifying V. cholerae, V. mimicus and V. vulnificus one step beyond primary isolation.

Antibodies reactive with the A antigen of the cholera vibrios were employed in a membrane enzyme-linked immunosorbent assay (ELISA) to detect V. cholerae O1 isolates in enrichment cultures. The membrane ELISA detected V. cholerae Ogawa cells in 6 hour alkaline peptone (AP) enrichment cultures initially...

...did not produce false positive results when overnight AP broth cultures inoculated with five heterologous Vibrio species were assayed. The membrane ELISA is a rapid and specific assay for the identification of O1 vibrios directly from...

17/3, K/27 (Item 1 from file: 135)
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0000520743 (USE FORMAT 7 OR 9 FOR FULLTEXT)
 Scientists at University of Murcia, Department of Cell Biology publish research in immunology
 Life Science Weekly, May 15, 2007, p.2711

DOCUMENT TYPE: Expanded Reporting LANGUAGE: English
 RECORD TYPE: FULLTEXT
 WORD COUNT: 479

Scientists at University of Murcia, Department of Cell Biology publish research in immunology

...TEXT: regulated at transcriptional and post-transcriptional levels," are detailed in a study published in Molecular Immunology. "Interleukin-1beta (IL-1beta) is the prototypic pro-inflammatory cytokine. All the biological effects of...

...1RII), lacks an intracellular signalling domain and acts as a decoy receptor that down-regulates responses to IL-1beta," scientists in Murcia, Spain report. "Although both receptors are present in bony... vertebrates remain to be established. In this study, a homologue of mammalian IL-1RII was isolated and characterized in the gilthead seabream (Sparus aurata). The seabream IL-1RII harboured two Ig...

...with that from other species and contained three ATTTA instability motifs, which seem to be responsible for its relatively short half-life (less than 2h). The expression of seabream IL-1RII was dramatically up-regulated after infection with Vibrio anguillarum in all the immune tissues examined and was even more strongly induced than the IL-1beta gene in the...

...leaking into the systemic circulation from the sites of inflammation. In vitro, bacterial DNA and flagellin increased the mRNA levels of IL-1RII in macrophages, while only flagellin was able to weakly induce its expression in acidophilic granulocytes," wrote G. Lopez-Castejon and...

...Cell Biology. The researchers concluded: "Finally, the seabream IL-1RI was localized in the plasma membrane when expressed in HEK293 cells and was able to bind IL-1beta." Lspez-Castejñn and...

Molecular Immunology (The type II interleukin-1 receptor (IL-1RII) of the bony fish gilthead seabream Sparus...

...is strongly induced after infection and tightly regulated at transcriptional and post-transcriptional levels. Molecular Immunology, 2007; 44(10):2772-80). For more information, contact G Lspez-Castejñn, University of Murcia...

...Cell Biology, Faculty of Biology, 30100 Murcia, Spain. Publisher contact information for the journal Molecular Immunology is: Pergamon-Elsevier Science Ltd., the Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, England. Keywords: Spain, Murcia, Molecular Immunology. This article was prepared by Life Science Weekly editors from staff and other reports. Copyright...

SUBJECT HEADI NG: Immunology

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0000458977 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Findings from Chonnam National University, South Korea, advance medical research
Science Letter, March 6, 2007, p. 1532

DOCUMENT TYPE: Expanded Reporting LANGUAGE: English
RECORD TYPE: FULLTEXT
WORD COUNT: 1005

Study 1: Research findings, "150 kDa glycoprotein isolated from Solanum ni grum Linne stimulates caspase-3 activation and reduces induci ble nitric oxide production in...

...study was carried out to investigate the apoptotic effects of glycoprotein (SNL glycoprotein, 150-kDa) isolated from Solanum ni grum Linne, which has been used as an antipyretic and anticancer agent in...

...and colleagues published the results of their research in Toxicology In Vitro (150 kDa glycoprotein isolated from Solanum ni grum Linne stimulates caspase-3 activation and reduces induci ble nitric oxide production in...

...Institute of Biotechnology, Kwangju, 300 Yongbong-Dong 500-757, South Korea.

Study 2: A bacterial flagellin, Vibrio vulnificus FlaB, has a strong mucosal adjuvant activity to induce protective immunity.

"Flagellin, the structural component of flagellar filament in various locomotive bacteria, is the ligand for Toll-like receptor 5 (TLR5) of...

...stimulation by various pathogen-associated molecular patterns leads to activation of innate and subsequent adaptive immune responses. Therefore, TLR ligands are considered attractive adjuvant candidates in vaccine development. In this study, we show the highly potent mucosal adjuvant activity of a Vibrio vulnificus major flagellin (FlaB)," investigators in South Korea report.

"Using an intranasal immunization mouse model, we observed that co-administration of the flagellin with tetanus toxoid (TT) induced

significantly enhanced TT-specific immunoglobulin A (IgA) responses in both mucosal and systemic compartments and IgG responses in the systemic compartment," said Shee Eun Lee at Chonnam National University and collaborators in South Korea. "The mice immunized with TT plus FlaB were completely protected from systemic challenge with a 200x minimum lethal dose of tetanus toxin. Radio-labeled FlaB administered into the nasal cavity readily reached the cervical lymph nodes and systemic circulation."

The researchers reported, "FlaB bound...

...number of TLR5-expressing cells in cervical lymph nodes."

They concluded, "These results indicate that flagellin would serve as an efficacious mucosal adjuvant inducing protective immune responses through TLR5 activation."

Lee and associates published their study in *Infection and Immunity* (A bacterial flagellin, *Vibrio vulnificus* FlaB, has a strong mucosal adjuvant activity to induce protective immunity. *Infect Immun*, 2006; 74(1):694-702).

For additional information, contact Joon Haeng Rhee, National Research Laboratory...

...family in the control of glioma invasion. Nr23-H1 expression in gliomas was assessed via immunohistochemistry, Western blot, RT-PCR and Northern blot analyses."

"The migration and invasion ability were also...

17/3, K/29 (Item 3 from file: 135)
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0000453043 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Research from the United States and Slovakia broadens understanding of cholera
Malaria Weekly, February 26, 2007, p. 41

DOCUMENT TYPE: Expanded Reporting LANGUAGE: English
RECORD TYPE: FULLTEXT
WORD COUNT: 1012

...TEXT: highlighted recently in medical journals.

Study 1: New research, "Polyphosphate stores enhance the ability of *Vibrio cholerae* to overcome environmental stresses in a low-phosphate environment," is the subject of a report. " *Vibrio cholerae*, the causative agent of Asiatic cholera, has been reported to make large quantities...

...biosynthesis. Deletion of *ppk* had no significant effect on production of cholera toxin, hemagglutinin/protease, motility, biofilm formation, and colonization of the suckling mouse intestine. The wild type and mutant had...

...colleagues published their study in *Applied and Environmental Microbiology* (Polyphosphate stores enhance the ability of *Vibrio cholerae* to overcome environmental stresses in a low-phosphate environment. *Applied and Environmental Microbiology*, 2006...

...additional information, contact I. K. Jahid, Morehouse School of Medicine, Dept. of Microbiology, Biochemistry and Immunology, 720 Westview Dr. SW Atlanta, GA 30310-1495 USA.

Study 2: Double mutant cholera toxin adjuvants have enhanced immunity without central nervous system toxicity.

According to scientists writing in the *Journal of Immunology*, "Nasal application of native cholera toxin (nCT) as a mucosal

adjuvant has potential toxicity for the CNS through binding to GM1 gangliosides in the olfactory nerves. Although mutants of cholera toxin (mCTs) have been developed that show mucosal adjuvant activity without toxicity, it still remains unclear whether these mCTs will induce CNS damage."

Y...

...exhibited very low toxicity in the Y1 cell assay and mouse ileal loop tests."

"When mucosal adjuvanticity was examined, both dmCTs induced enhanced OVA-specific immune responses in both mucosal and systemic lymphoid tissues. Interestingly, although both dmCT E112K/ KDEV and dmCT E112K/ KDGL showed high Th2-type and significant Th1-type cytokine responses by OVA-specific CD4+ T cells, dmCT E112K/ KDEV exhibited significantly lower Th1-type cytokine responses than did nCT and dmCT E112K/ KDGL," the researchers reported.

They concluded, "These results show that newly developed dmCTs retain strong biological adjuvant activity without CNS toxicity."

Hagiwara and colleagues published their study in the Journal of Immunology (A second generation of double mutant cholera toxin adjuvants: Enhanced immunity without intracellular trafficking. J Immunol, 2006; 177(5): 3045-3054).

Additional information can be obtained by contacting K. Fujihashi, University of Alabama, Dept. of Pediatric Dentistry, Immunobiology Vaccine Center, 761 Beville Biomedical Research Bldg, 845 19th St. S., Birmingham, AL 35294, USA.

Study 3: Investigators have identified complex conjugates based on Vibrio cholerae O1 Ogawa lipopolysaccharide antigen that show promise as vaccine candidates.

Scientists writing in the journal Clinical and Experimental Immunology report, "Host protection by humoral immunity against Vibrio cholerae O1 confers lipopolysaccharide (LPS)-specific vibriocidal antibodies. Levels of relevant specific antibodies are closely related to complement-mediated inactivation of the vibrios inoculum, especially on the mucosal surface of intestine. We have tested complex V. cholerae O1 Ogawa-detoxified lipopolysaccharide (dLPS) conjugates. The first conjugate contained glucan both as the immunomodulator and the matrix; the second conjugate contained immunologically inert amylose as matrix."

"Both d-LPS conjugates contain multiply attached dLPS antigen," said Ema Paulovicova and colleagues at the Slovak Academy of Sciences. "These conjugates elicited a statistically significant increase of antigen-specific IgG levels in mice ($p < 0.001$ and $p < 0.05$, respectively). The specific anti-conjugate IgG and IgA response after the second (booster) dose were significantly higher compared to pre-immune and whole-cell response. The most effective vibriocidal activity was observed in the case of conjugate, with glucan as

...determination of specific IgG subclasses and IgG2a + 2b/IgG1 ratio revealed a dominant Th1 cell response crucial for effective vaccine candidate."

Paulovicova and associates published their study in Clinical and Experimental Immunology (Immunological properties of complex conjugates based on Vibrio cholerae O1 Ogawa lipopolysaccharide antigen. Clin Exp Immunol, 2006; 144(3): 521-527).

Additional information can be obtained by contacting Ema Paulovicova, Institute...

...84538, Slovakia. chemempa@savba.sk.

Keywords: Bratislava, Slovakia, Cholera Vaccine, Vaccine Development, Vaccine Efficacy, Lipopolysaccharide Antigens, Immunology, Immunotherapy, Vibrio cholerae, Proteomics.

This article was prepared by Malaria Weekly editors from staff and

other reports...

DESCRIPTORS: Biotechnology; Bratislava; Cholera Vaccine; Drug Development; Immunology; Immunotherapy; Lipopolysaccharide Antigens; Pharmaceuticals; Proteomics; Slovakia; Therapy; Treatment; Vaccine Development; Vaccine Efficacy; Vibrio cholerae; All News; Professional News

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0000363080 (USE FORMAT 7 OR 9 FOR FULLTEXT)
 Studies from Chonnam National University, South Korea, highlight latest findings
 Science Letter, November 14, 2006, p. 448

DOCUMENT TYPE: Expanded Reporting LANGUAGE: English
 RECORD TYPE: FULLTEXT
 WORD COUNT: 1082

Study 1: Data detailed in "Hepatoprotective and hypolipidaemic effects of glycoprotein isolated from Gardenia jasminoides ellis in mice" have been presented. According to a study from South...

...study was performed to investigate the hepatoprotective and hypolipidaemic effects of a 27 kDa glycoprotein isolated from Gardenia jasminoides Ellis (GJE glycoprotein) in glucose/glucose oxidase (G/GO)-treated BNL CL...

...their study in Clinical and Experimental Pharmacology and Physiology (Hepatoprotective and hypolipidaemic effects of glycoprotein isolated from Gardenia jasminoides ellis in mice. Clinical and Experimental Pharmacology and Physiology, 2006;33(10...

...authors concluded.

Choi and associates published their study in the Annals of Allergy Asthma and Immunology (Strain-dependent suppressive effects of BCG vaccination on asthmatic reactions in BALB/c mice. Ann Allergy Asthma Immunol, 2005;95(6):571-578).

For additional information, contact Inseon S. Choi, Department of Allergy...

...Hakdong, Kwangju 501-757, South Korea. ischoi@chonnam.chonnam.ac.kr.

Study 3: A bacterial flagellin, *Vibrio vulnificus* FlaB, has a strong mucosal adjuvant activity to induce protective immunity.

"Flagellin, the structural component of flagellar filament in various locomotive bacteria, is the ligand for Toll-like receptor 5 (TLR5) of...

...stimulation by various pathogen-associated molecular patterns leads to activation of innate and subsequent adaptive immune responses. Therefore, TLR ligands are considered attractive adjuvant candidates in vaccine development. In this study, we show the highly potent mucosal adjuvant activity of a *Vibrio vulnificus* major flagellin (FlaB)," investigators in South Korea report.

"Using an intranasal immunization mouse model, we observed that co-administration of the flagellin with tetanus toxoid (TT) induced significantly enhanced TT-specific immunoglobulin A (IgA) responses in both mucosal and systemic compartments and IgG

responses in the systemic compartment," said Shee Eun Lee at Chonnam National University and collaborators in South Korea. "The mice immunized with TT plus FlaB were completely protected from systemic challenge with a 200x minimum lethal dose of tetanus toxin. Radio-labeled FlaB administered into the nasal cavity readily reached the cervical lymph nodes and systemic circulation."

The researchers reported, "FlaB bound...

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Lee and associates published their study in *Infection and Immunity* (A bacterial flagellin, *Vibrio vulnificus* FlaB, has a strong mucosal adjuvant activity to induce protective immunity. *Infect Immun*, 2006; 74(1): 694-702).

For additional information, contact Joon Haeng Rhee, National Research Laboratory...

...Gwangju 501-746, South Korea. jhrhee@chonnam.chonnam.ac.kr.

Keywords: Kwangju, South Korea, Vaccine Adjuvant, Vaccine Development, Vaccine Efficacy, Dendritic Cell Vaccine, Mucosal Immunization, Immunology, Immunotherapy, *Vibrio vulnificus*, Flagellin, Proteomics.

This article was prepared by Science Letter editors from staff and other reports. Copyright...

DESCRIPTORS: Chonnam National University; D; Dendritic Cell Vaccine; Flagellin; Immunology; Immunotherapy; Kwangju; Mucosal Immunization; Pharmaceuticals; Proteomics; South Korea; Vaccine Adjuvant; Vaccine Development; Vaccine Efficacy; *Vibrio vulnificus*; All News; Professional News

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0000004068 (USE FORMAT 7 OR 9 FOR FULLTEXT)
 Bengal-15 Efficacious for Preventing 0139 Strain
 Boyles, Salynn
 Vaccine Weekly, June 19, 1995, p. 5-6

DOCUMENT TYPE: Editor's Choice **LANGUAGE:** English
RECORD TYPE: FULLTEXT
WORD COUNT: 676

TEXT: Bengal-15 is a safe live attenuated vaccine candidates for cholera caused by *Vibrio cholerae* 0139.

Until the *Vibrio cholerae* 0139 (called Bengal) emerged in Asia, cholera epidemics had exclusively been caused by V...

...V. *cholerae* 0139 among all ages in areas where 01 cholera is epidemic indicates that immunity to 01 cholera is not protective against 0139.

...genetically related to El Tor 01 strains," researcher Trinkha S. Coster and colleagues wrote ("Safety, Immunogenicity, and Efficacy of Live Attenuated *Vibrio Cholerae* 0139 Vaccine Prototype," *The Lancet*, April 15, 1995; 345: 949-952). "However, Bengal strains are immunologically distinct from V. *cholerae* 01 strains of either the El Tor or classic biotype, due...

...acquired - through horizontal gene transfer and recombination - novel DNA sequences encoding 0139 lipopolysaccharide and an antigenically cross-reacting O antigen capsule."

Coster et al. write that live attenuated 01 strains of V. cholerae show promise as oral vaccines but are not ideal because of high reactogenicity, low immunogenicity, and concerns about environmental safety.

"We have developed a genetic strategy for attenuating El Tor...

...of these concerns. The resultant vaccine strain, Peru-14, was shown to be well tolerated, immunogenic, and, in a small cohort of volunteers, protective against El Tor cholera after a single...

...developing 0139 live vaccine candidates."

In this report Coster et al. describe the safety and immunogenicity profile of three different 0139 vaccine candidates.

Attenuated V. cholerae 0139 vaccines were made by...

...of cholera toxin, thus generating strains Bengal-3 and VRI-16. A stable spontaneous non-motile derivative of Bengal-3 was isolated and designated Bengal-15; VRI-16 is naturally non-motile.

Bengal-3, Bengal-15 and VRI-16 were evaluated as oral single-dose cholera vaccine...

...three who received M010 had diarrhea. VRI-16 caused no significant symptoms but was not immunogenic. Bengal-15 produced few symptoms and was nearly as immunogenic as M010.

Bengal-15 was given to 10 volunteers at a dose of 10⁸...

...high degree of recombinational stability to this vaccine strain," Coster et al. wrote. "Additionally, the motility defect present in Bengal-15 did not impair colonization or immunogenicity of the vaccine, findings that parallel our experience with motility-deficiency El Tor 01 strain Peru-14 and non-motile Peru-15. We speculate that motility-deficient mutant strains are unable to penetrate the mucous layer covering the epithelium and are therefore unable to directly stimulate enterocytes to release cytokines...

17/3, K/32 (Item 6 from file: 135)
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0000000670 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Genetically Engineered Cholera Vaccine May Eradicate Ancient Plague
Vaccine Weekly, November 20, 1995, p. 5-9

DOCUMENT TYPE: Editor's Choice LANGUAGE: English
RECORD TYPE: FULLTEXT
WORD COUNT: 2683

...TEXT: the development of the new vaccine.

If the vaccine is indeed safe and effectively stimulates mucosal immunity, it could not only prevent cholera but could also be used as a vector to carry vaccine antigens for other diseases, such as HIV, malaria, and hepatitis.

...for cholera, Waldor observed, because for this disease - as for many other bacterial infections - the antigens that stimulate protective immunity are complex polysaccharides that are not encoded by genes.

Research leading to the development of...

...vaccine appropriately began with Robert Koch, who discovered the

causative organism of cholera: the highly motile, gram-negative rod *Vibrio cholerae*.

"Koch said that to cure the pestilence of cholera we must first understand it..."

...apply this understanding to the rational design of live attenuated cholera vaccines."

Waldor noted that *Vibrio cholerae* species are divided into more than 100 known serogroups. These serogroups can be distinguished...

...world including into Latin America, and this is caused by the El Tor biotype of *Vibrio cholerae* 01," Waldor said. "The classical biotype of cholera is now probably absent from the..."

...of epidemic cholera: the 01 biotype El Tor, which occurs on most continents and is responsible for the current epidemics in Latin America and Africa; and the 0139 biotype, seen only...

...in the small intestine where it elaborates a protein enterotoxin - cholera toxin - which is largely responsible for the severe secretory diarrhea that is the hallmark of this disease."

More than 10...

...vaccines.

Levine et al. showed that experimental cholera infection of volunteers leads to long-lasting immunity. This mucosal immunity is thought to be based on secretory IgA molecules directed against the cell-surface lipopolysaccharide...

...These studies were by and large disappointing. There was not a high degree of protective immunity induced by these killed parenteral vaccines and the immunity that was induced was short lived. So at this time there is not much optimism for a killed parenteral vaccine."

Two oral cholera vaccines also have been developed: a killed whole-cell vaccine and the live attenuated vaccines of Waldor and colleagues.

Waldor noted that Swedish researchers...

...Gothenburg have conducted a large-scale field trial in Bangladesh where they compared a killed-whole-cell preparation of *V. cholerae* to the killed-cell preparation plus the nontoxic B subunit of...

...was substantially less effective in children," Waldor said. "The two principle limitations of the killed-whole-cell approach, although it did show efficacy, was first, that it required multiple doses to be..."

...advantages: * Vaccination with live attenuated vaccines resembles natural infection, a process known to be highly immunizing. "We don't really know why infection with *V. cholerae* leads to such a high degree of protective immunity," Waldor said. "However, we do know that live cells in contrast to killed cells are taken up far more efficiently by M cells. These are the antigen-sampling cells that line the small intestine." * Live attenuated vaccines can take advantage of the in vivo replication of vaccine strains. "This allows for much smaller immunizing doses," Waldor said. "Also, while the vaccine strain is replicating in vivo, it responds to the environmental signals present in the small intestine and that leads to the induction of a variety of antigens that are specifically induced in vivo. It remains a theoretical possibility that the immune response to those in vivo expressed antigens may play a role in protective immunity."

To create live attenuated cholera vaccines, researchers began by finding - and then deleting - the genes responsible for virulence

while leaving intact the genes encoding immunogens.

"The first constructs consisted of deletions of all or part of the genes encoding cholera...

...adverse effects have been termed reactogenicity."

Researchers are currently working to identify the putative toxins responsible for reactogenicity, but have thus far been unable to find the genes responsible for this phenomenon.

"The live *V. cholerae* vaccine strain most extensively tested is the strain...

...with current epidemic strains of *V. cholerae* .

"Our El Tor vaccine candidate began with an isolate from the original outbreak in Peru in 1991," he said. "Our 0139 vaccine candidate began with an 0139 strain isolated in the early part of the 0139 epidemic from Madras, India."

This rational vaccine development...

...B subunit." Holgren et al. had previously found that the B subunit is crucial for immunity to *V. cholerae* . * Finally, the Harvard research team selected only non-motile mutants for their vaccine constructs. "The reason for that came from a hypothesis in our lab that the deletion of motility may hold the key to the abrogation of reactogenicity, which has plagued virtually all cholera vaccine strains," Waldor said. "If we take a fully motile cholera strain, this organism is able to swim through the mucus gel that covers most...

...when they are in close opposition to the intestinal epithelium lead to a local inflammatory response which can give rise to reactogenicity. Non-motile strains are unable to penetrate the mucus and therefore do not elicit reactogenicity. However, both motile and non-motile strains are able to be taken up by those M cells, the antigen-sampling cells in the small intestine, and therefore give rise to the mucosal immune response. The reason for this is that M cells by and large are not covered by...

...he and colleagues are working to establish their vaccine strains as vectors capable of delivering antigens to the mucosal immune system

"We are working on ways to make cholera the optimal vaccine vector for the mucosal immune system," he said. "Of course, we have rivals in bacterial strains such as salmonella or...

...to the free or nearly free distribution of them"

Another audience member asked whether the immunogenicity of the live attenuated vaccine strains could be improved so that they offer even more protection than natural infection.

"In addition to using these vaccine strains to express foreign antigens, we could also use them to express cytokine genes, to express targeting of the vaccine...

...to M cells," Waldor said. "As we begin to learn more about the keys to mucosal immune response then I think the live vaccine approach will allow us to engineer effective vaccines." - by...

17/3, K/33 (Item 1 from file: 357)
DI ALOG(R) File 357: Derwent Biotech Res.
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0453933 DBR Accession No.: 2008-12442 PATENT
New adjuvant combination for treating viral, e.g. HIV, bacterial infection or cancer comprises an agonist of CD40 or 4-1BB, a microbial Toll Like Receptors (TLR) agonist, and a desired antigen - recombinant protein produced by vector mediated gene expression in host

cell, useful in treatment of infectious disease, cancer and human immunodeficiency virus infection

AUTHOR: DELUCIA D

PATENT ASSIGNEE: UNIVERSITY OF COLORADO 2008

PATENT NUMBER: US 20080241139 PATENT DATE: 20081002 WPI ACCESSION NO.:

2008-M48007 (200873)

PRIORITY APPLIC. NO.: US 931237 APPLIC. DATE: 20071031

NATIONAL APPLIC. NO.: US 931237 APPLIC. DATE: 20071031

LANGUAGE: English

New adjuvant combination for treating viral, e.g. HIV, bacterial infection or cancer comprises an agonist of CD40 or 4-1BB, a microbial Toll Like Receptors (TLR) agonist, and a desired antigen - recombinant protein produced by vector mediated gene expression in host cell, useful in treatment of infectious disease, cancer and human immunodeficiency virus infection

ABSTRACT: DERWENT ABSTRACT: NOVELTY - An adjuvant combination which elicits a synergistic effect on T cell immunity comprising: (a) an agonist of CD40 or 4-1BB; (b) a microbial Toll Like Receptors...

... from a whole microorganism or virus, which may be live, dead or inactivated or an extract or portion of a virus or microorganism that functions as a TLR agonist other than a discrete compound such as a flagellin polypeptide; and (c) optionally a desired antigen, is new. DETAILED DESCRIPTION - INDEPENDENT CLAIMS are:

(1) a recombinant microorganism containing a adjuvant combination; and (2) a method for eliciting an antigen specific cellular immune response by administering a adjuvant combination or a composition containing said adjuvant combination. BIOTECHNOLOGY - Preferred Adjuvant: In the adjuvant combination which elicits a synergistic effect on T cell immunity, the TLR agonist is a whole microorganism or virus. The microorganism is a yeast or...

... TLR selected from TLR1-12. The TLR agonist is a yeast or bacterial spheroplast, cytoplasm, membrane, or subcellular particle. The microorganism or virus expresses a CD40 agonist and/or a heterologous (non-native) antigen against which a T cell immune response is to be elicited. The TLR agonist is a yeast or bacterium that expresses an antigen and/or CD40 or 4-1BB agonist on its surface. The yeast is a *Saccharomyces*...

... antibody fragment or a 4-1BB ligand protein, derivative, fragment, multimer or its conjugate. The immunoglobulin (Ig) is a chimeric Ig. The Ig is a humanized Ig. The Ig is a...

... The Ig light chain and Ig heavy chain sequences are intervened by an IRES. The antigen is a viral, bacterial, fungal, or parasitic antigen. The antigen is a human antigen. The human antigen is a cancer antigen, autoantigen or other human antigen the expression of which correlates or is involved in a chronic human disease. The viral antigen is specific to a virus selected from the group consisting of HIV, herpes, papillomavirus, ebola...

... pox virus, varicella zoster, African swine fever virus, influenza virus and parainfluenza virus. The bacterial antigen is derived from a bacterium selected from *Salmonella*, *Escherichia*, *Pseudomonas*, *Bacillus*, *Vibrio*, *Campylobacter*, *Helicobacter*, *Erwinia*, *Borrelia*, *Peptobacter*, *Clostridium*, *Serratia*, *Xanthomonas*, *Yersinia*, *Burkholderia*, *Listeria*, *Shigella*, *Pasteurella*, *Enterobacter*, *Corynebacterium* and *Streptococcus*. The parasite antigen is derived from a parasite selected from *Babesia*, *Entamoeba*, *Leishmania*, *Plasmodium*, *Trypanosoma*,

Toxoplasma, Giardia, flat worms and round worms. The fungal antigen is derived from a fungi selected from Aspergillus, Coccioides, Cryptococcus, Candida, Nocardia, Pneumocystis, and Chlamydia. The antigen is a cancer antigen expressed by a human cancer selected from prostate cancer, pancreatic cancer, brain cancer, lung cancer...

- ... cancer, cervical cancer, head and neck cancer, sarcoma, glial cancer, and gall bladder cancer. The antigen is an autoantigen the expression of which correlates to an autoimmune disease. Preferred Method: In eliciting an antigen specific cellular immune response, administering results in: (a) enhanced primary and memory CD8+ T cell responses relative to the administration of a DNA encoding only a CD40 agonist or TLR agonist; (b) induces exponential expansion of antigen specific CD8+ T cells; and (c) generates a protective immune response in a CD4 deficient host comparable to a normal (non-CD4 deficient) host. The antigen is selected from a viral antigen, bacterial antigen, fungal antigen, autoantigen, allergen, and cancer antigen. The antigen is a HIV antigen. The HIV antigen is gag or env. The antigen is an antigen expressed by a human tumor. The disease treated is selected from cancer, allergy, inflammatory disease...
- ... its portion that causes the disease or a virus or microorganism engineered to express an antigen. The virus is HIV. Administration results in: (a) elicits substantially enhanced primary and memory CD8+ T cell responses relative to the administration of the CD40 agonist or the TLR agonist alone; (b) induces exponential expansion of antigen specific CD8+ T cells; and (c) generates a protective immune response in a CD4 deficient host that is comparable to a normal (non-CD4 deficient) host...
- ... Anti-HIV; Antibacterial. No biological data given. MECHANISM OF ACTION - TLR-Agonist; Vaccine. USE - The adjuvant and methods are useful for eliciting an antigen specific cellular immune response and treating viral, e.g. HIV, bacterial infection or cancer (all claimed). ADMINISTRATION - Administration can be through intramuscular, intravenous, intradermal, subcutaneous, intraperitoneal, intranasal, oral, mucosal, intracranial, intraorbital, ophthalmic, intracapsular, intraspinal, and topical administration. No dosage details given. ADVANTAGE - The invention is effective at stimulating a cell-mediated immune response and produce an immune response that is largely Th2 biased. EXAMPLE - No example given. (10 pages)

17/3, K/34 (Item 2 from file: 357)
 DIALOG(R) File 357: Derwent Biotech Res.
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0446637 DBR Accession No.: 2008-05146 PATENT
 New immunogenic composition comprises isolated Campylobacter jejuni flagella secreted protein A or its fragments, from strains of C. jejuni, useful as a vaccine for inducing an immune response against C. jejuni - pharmaceutical composition comprising recombinant protein produced by vector mediated gene expression in Escherichia coli, useful as vaccine for prevention of Campylobacter jejuni infection
 AUTHOR: GUERRY-KOPECKO P; BAQAR S
 PATENT ASSIGNEE: GUERRY-KOPECKO P; BAQAR S 2008
 PATENT NUMBER: US 20080003234 PATENT DATE: 20080103 WPI ACCESSION NO.: 2008-E45198 (200830)

10585880VI Brio.txt
PRIORITY APPLIC. NO.: US 800955 APPLIC. DATE: 20070508
NATIONAL APPLIC. NO.: US 800955 APPLIC. DATE: 20070508
LANGUAGE: English

New immunogenic composition comprises isolated Campylobacter jejuni flagella secreted protein A or its fragments, from strains of C. jejuni, useful as a vaccine for inducing an immune response against C. jejuni - pharmaceutical composition comprising recombinant protein produced by vector mediated gene expression in...

ABSTRACT: DERWENT ABSTRACT: NOVELTY - An immunogenic composition comprising isolated C. jejuni flagella secreted protein A, or isolated fragments of C. jejuni flagella secreted protein A, from one or more strains of C. jejuni, is new. DETAILED DESCRIPTION - An INDEPENDENT CLAIM is a method of inducing an immune response against C. jejuni. BIOTECHNOLOGY - Preferred Immunogenic Composition: The flagella secreted protein A is a recombinant polypeptide with an amino acid sequence selected from any...

... bp (SEQ ID NO. 13 or 15) given in the specification. Preferred Method: Inducing an immune response against C. jejuni comprises administering a dose of the immunogenic composition above. It comprises administering one or more boosting doses subsequent to the priming dose, where the boosting dose is comprised of the same the immunogenic composition as administered in the priming dose. The composition is a recombinant polypeptide comprising SEQ...

... member of the genus Campylobacter, member of the genus Salmonella, or member of the genus Vibrio. ACTIVITY - Antibacterial; Antidiarrheic. Test details are described but no results given. MECHANISM OF ACTION - Vaccine. USE - The immunogenic composition can be used as a vaccine for inducing an immune response against C. jejuni. ADMINISTRATION - The dose is administered by intranasal, subcutaneous, transdermal, oral, or intravenous route (claimed). No dosage details given. EXAMPLE - No suitable example given...

17/3, K/35 (Item 3 from file: 357)
DIALOG(R) File 357: Derwent Biotech Res.
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0378939 DBR Accession No.: 2005-24645 PATENT
Composition for stimulating immune system in subject against Listeria monocytogenes, has pathogen associated molecular pattern that activates TLR2 and TLR5, and distinct L. monocytogenes antigens - pathogen associated molecular pattern for use in immune system induction
AUTHOR: POWELL T J; MEDZHITOV R M
PATENT ASSIGNEE: UNIV YALE; VAXINNATE CORP 2005
PATENT NUMBER: WO 200577408 PATENT DATE: 20050825 WPI ACCESSION NO.: 2005-582850 (200559)
PRIORITY APPLIC. NO.: US 542739 APPLIC. DATE: 20040206
NATIONAL APPLIC. NO.: WO 2005US3367 APPLIC. DATE: 20050204
LANGUAGE: English

Composition for stimulating immune system in subject against Listeria monocytogenes, has pathogen associated molecular pattern that activates TLR2 and TLR5, and distinct L. monocytogenes antigens - pathogen associated molecular pattern for use in immune system induction
... ABSTRACT: least one member chosen from TLR2 and TLR5, and at least two distinct Listeria monocytogenes antigens, is new. DETAILED DESCRIPTION - A composition (I), comprises: (a) a pathogen associated

molecular pattern that...

- ... least one member chosen from TLR2 and TLR5, and at least two distinct *Listeria monocytogenes* antigens; (b) a pathogen associated molecular pattern that activates at least one member chosen from TLR2 and TLR5, and a *L. monocytogenes* antigen that is not listeriolysin; or (c) a pathogen associated molecular pattern that activates at least one member chosen from TLR2 and TLR5, and *L. monocytogenes* p60 antigens. INDEPENDENT CLAIMS are also included for: (1) composition (C1) comprising SEQ ID No: 12, 14...
- ... pathogen associated molecular pattern that activates TLR2 or TLR5, at least two distinct *L. monocytogenes* antigens; (4) nucleic acid construct (III) encoding SEQ ID No: 12, SEQ ID No: 14 and...
- ... V) encoding a pathogen associated molecular pattern that activates TLR2 or TLR5, and *L. monocytogenes* antigen that is not listeriolysin or *L. monocytogenes* p60 antigen; (7) a vector (V1) comprising (II) or (V); (8) a host cell (H1) comprising (V1)...
- ... associated molecular pattern that activates TLR2 or TLR5, and at least two distinct *L. monocytogenes* antigens, and isolating the fusion protein produced by the host cell; (b) culturing a host cell comprising a...
- ... protein including a pathogen associated molecular pattern that activates TLR2 or TLR5, and *L. monocytogenes* antigen that is not listeriolysin, and isolating the fusion protein produced by the host cell; or (c) culturing a host cell comprising...
- ... including a pathogen associated molecular pattern that activates TLR2 or TLR5, and *L. monocytogenes* p60 antigen, and isolating the fusion protein produced by the host cell. BIOTECHNOLOGY - Preferred Composition: In (I), the pathogen associated molecular pattern and *L. monocytogenes* antigens are components of a fusion protein. The pathogen associated molecular pattern activates a TLR2 signaling...
- ... pattern includes at least a fragment of SEQ ID No: 1 and the *L. monocytogenes* antigens include at least a fragment of each of SEQ ID No: 7 and SEQ ID...
- ... TLR5 signaling pathway. The pathogen associated molecular pattern is at least a fragment of a flagellin. The flagellin includes a polypeptide chosen from *Helicobacter pylori*, *Vibrio cholera*, *Serratia marcescens*, *Shigella flexneri*, *Treponema pallidum*, *Legionella pneumophila*, *Borrelia burgdorferi*, *Clostridium difficile*, *Rhizobium meliloti*...
- ... lupine, *Bartonella clarridgeiae*, *Proteus mirabilis*, *Bacillus subtilis*, *L. monocytogenes*, *Pseudomonas aeruginosa* and *E. coli*. The flagellin is chosen from *Salmonella typhimurium* fljB and *E. coli* FljC. The *S. typhimurium* fljB includes...
- ... chosen from lipopolysaccharides, phosphatidyl choline, glucans, peptidoglycans, teichoic acids, lipoteichoic acids, proteins, lipoproteins, lipopeptides, outer membrane proteins (OMPs), outer surface proteins (OSPs), protein components of bacterial cell walls, flagellins, bacterial DNAs, single and double-stranded viral RNAs, unmethylated CpG DNAs, mannans, mycobacterial membranes, and porins. The antigens include at least a fragment of SEQ ID No: 7 and SEQ ID No: 8. The antigens are encoded by the nucleic acid sequences that includes a fragment of at least one...
- ... pattern includes at least a fragment of SEQ ID No: 3 and the *L. monocytogenes* antigens include at least a fragment of each of SEQ ID No: 7 and SEQ ID...

... associated molecular pattern includes at least a fragment of SEQ ID No: 5 and the antigens include at least a fragment of each of SEQ ID No: 7 and SEQ ID No: 1 and the antigens include at least a fragment of each of SEQ ID No: 7 and SEQ ID No: 8. The pathogen associated molecular pattern and the *L. monocytogenes* p60 antigen are components of a fusion protein. (C1) further includes at least one additional *L. monocytogenes* antigen. The additional *L. monocytogenes* antigen is listeriolysin. Preferred Construct: In (II), the antigens are encoded by the nucleic acid sequences that includes a subsequence of at least SEQ...

... No: 10. ACTIVITY - Antibacterial; Gastrointestinal - Gen. No supporting data is given. MECHANISM OF ACTION - Stimulates immune response (claimed). USE - (I) is useful for stimulating immune system in a subject (claimed) against *L. monocytogenes* causing gastroenteritis. ADMINISTRATION - (I) is administered orally, intravenously, intraperitoneally, subcutaneously or intramuscularly. No dosage given. (77 pages)

DESCRIPTORS: pathogen associated molecular pattern composition, fusion protein, *Listeria monocytogenes* antigen activation, vector-mediated gene transfer expression in host cell, appl. gastroenteritis, immune system induction bacterium (24, 40)

17/3, K/36 (Item 1 from file: 457)
 DIALOG(R) File 457: The Lancet
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0000157770

USE FORMAT 7 OR 9 FOR FULL TEXT

Bacterial genome sequencing and its use in infectious diseases
 Fournier, Pierre-Edouard; Drancourt, Michel; Raoult, Didier
 The Lancet Infectious Diseases vol. 7, 11 PP: 711-723 Nov 2007
 DOCUMENT TYPE: PERIODICAL; General Information LANGUAGE: English
 RECORD TYPE: New; Fulltext
 LENGTH: 13 Pages
 WORD COUNT: 10302

TEXT:

... identification of virulence factors, and exploration of host-pathogen interactions. Third, within the deduced proteome, antigens may be selected for serological applications, development of monoclonal antibodies, or development of vaccines. Herein...

... sequence-based identification as reliable alternatives to phenotypic methods for the detection and identification of isolated and clinical-specimen bacteria. The main limitation of molecular techniques is selection of target sequences... the detection of *Mycobacterium* spp. 14, 39

Molecular genotyping

Genotyping (or molecular fingerprinting) of bacterial isolates is useful in several situations, including (1) description of laboratory cross-contamination, as reported in...

... of reagents, poor reproducibility within and between laboratories, inability to quantify the genetic relations between isolates, and, perhaps the most important limitation, difficulty of comparing results obtained from different laboratories.

Genome...

... gel electrophoresis has long been a first-line technique to examine

molecular relatedness of several isolates within a bacterial species. This technique relies on the electrophoretic separation of large genomic fragments... MLST for these particular organisms.

Multispacer typing has been successfully developed for typing *Y. pestis* isolates, including direct typing of clinical isolates.⁷⁴ This method relies on the assumption that intergenic spacers, which undergo less evolutionary pressure...

...16 *Helicobacter pylori*,⁴ *Listeria monocytogenes*,⁵ *Pseudomonas aeruginosa*,⁶ *S. aureus*,⁷ *S. pneumoniae*,⁸ *Vibrio cholerae*,⁹ and *Y. pestis*? DNA microarrays may also be used to detect and...

...identified resistance-causing genes or mutations that may be easily detected by PCR of clinical isolates and, thus, may serve as targets for routine detection tools.¹¹³ Genome sequencing to identify...

...of virulence genes may lead to the development of rapid screening tests that allow effective isolation measures in hospital inpatients or postponement of hospital admission after carriage decontamination. Comparative sequence analyses...

...been identified *in silico*, including the *rickA* gene involved in actin polymerisation, which allows rickettsial motility within eukaryotic cell cytoplasm,³² an experimentally confirmed haemolytic activity,³³ a phospholipase D-encoding... given bacterium. This exhaustive approach may be completed by expression of the corresponding proteome, testing immunoreactive characteristics of selected proteins, and use of the best antigens for the development of serological tools. For *T. pallidum*, the causative agent of syphilis, this strategy allowed the identification of a representative panel of antigens,¹⁴⁵ and showed that the human humoral immune response to individual *T. pallidum* proteins develops at different rates during the course of infection. For...

...leprae, two proteins, initially selected by use of comparative genomics, showed marked humoral and cellular immunogenicity resulting in promising candidates for the diagnosis of leprosy.^{146,147} Conversely, the genome may serve to identify antigens that have been detected within the proteome of a bacterium by immunoblotting and mass spectrometry. This strategy was used for *T. whipplei* and has resulted in identification...

...makes it difficult and expensive. By contrast, genomic analysis allows for identification of all potential antigenic proteins of a bacterium. Therefore, we can limit the number of candidate antigens by selecting those that are specific to genus, species, or strain. Additionally, it is possible...

...151 with the possibility of rational selection of vaccine candidates rather than empirical testing of antigens one at a time.¹⁵² This strategy, named reverse vaccinology,¹⁵³ may be completed by functional immunomics for optimal epitope prediction,¹⁵⁴ and may lead to the development of DNA vaccines.¹⁵⁵...

...This finding motivated the design of a universal anti-*S. agalactiae* vaccine made of four antigens, none of which was present in all strains, but the combination of which was protective...

...Bacteroidetes phyla. Unexpectedly, this study showed great inter-subject variability and significant differences between stool and mucosal community compositions. Subsequently, other metagenomic studies have allowed the identification of an imbalance in the...

SI DEBAR:

CITED REFERENCES:

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17/3, K/37 (Item 2 from file: 457)

DIALOG(R) File 457: The Lancet

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0000148862

USE FORMAT 7 OR 9 FOR FULL TEXT

Chips with everything: DNA microarrays in infectious diseases
Bryant, Penelope A; Venter, Deon; Robins-Browne, Roy; Curtis, Nigel
The Lancet Infectious Diseases vol. 4, 2 PP: 100-111 Feb 2004
DOCUMENT TYPE: PERIODICAL; General Information LANGUAGE: English

RECORD TYPE: New, Full text
 LENGTH: 12 Pages
 WORD COUNT: 9187

TEXT:

...pathogenicity. Host studies show the complexities of development and activation of both innate and adaptive immunity. Host-pathogen studies allow global analysis of gene expression during pathogenesis. Microarray technology will accelerate...

...function. The context in which such genes are upregulated and downregulated provides insights into functional responses of both host and pathogen.

Microarray technology

A microarray is a solid substrate, such as...is normalised using replicate data and bioinformatics software.^{4,5} The key is then to extract biological knowledge from these data.

Types of microarray experiment

Microarrays can be used in two...

...produced from a sequenced genome can be used to compare the genomes of different unsequenced isolates by detecting genes that are conserved between them. However, this method cannot detect sequences that are present only in the test isolates. One solution to this problem is the universal oligonucleotide array. Short oligonucleotide sequences (6 to...

...pathogen. Chizhikov et al⁶ used two oligonucleotide sequences per gene from six genes encoding bacterial antigenic determinants and virulence factors to detect enteric pathogens (*Salmonella* spp, *Shigella* spp, and *Escherichia coli*...

...sequence or expression features of the organism (or both), or on features of the host response to the organism.¹² The clinical relevance of the latter is that it permits a...

...strains. Unlike PCR, the use of microarrays allowed the detection of random mutations since each isolate produced a unique hybridisation pattern. The different types of microarray have different detection sensitivities. Spotted mutations. Microarrays could therefore be used to track the evolution of adaptive responses of microorganisms' genomes to environmental changes. Microarrays were also more sensitive than other molecular techniques...

...microarrays to study several outbreaks of acute rheumatic fever. Comparison of the genomes of 36 isolates of serotype M18 group A streptococcus showed outbreaks of genetically nearly identical strains in Salt...

...of almost 2000 genes from a reference strain to compare the genomes of 20 pneumococcal isolates representing major antibiotic-resistant clones. They reported 75% overall genetic homology. The differences included genes...

...or tissue damage. In the search for the factors that support transmission and infectivity of *Vibrio cholerae*, Merrell et al²¹ used cDNA microarrays to compare gene expression profiles of virulent organisms isolated from human stool and non-virulent laboratory strains by competitive hybridisation. Unexpectedly, there was no...

...shedding. Instead there was upregulation of 44 genes, many of which are involved in cell motility and nutrient acquisition. The most strongly upregulated gene was one whose function is as yet...

...involved in growth in the previous environment.²⁴

Host studies

An understanding of the host immune system is vital to a thorough understanding of infectious disease. Global expression analysis is helping to unravel the complexities of immunology. Examining cells of both the innate and adaptive immune system at various stages of differentiation, maturation, and activation shows the power of unbiased approaches.

Innate immunity

Innate immune responses initiated by the recognition of microbial surface or secreted components are increasingly recognised as being important. Microarrays have been used to advance our understanding of the genetic processes involved in immune cell development.³¹⁻³⁴ Le Naour et al³³ used oligonucleotide arrays to show that 255...

...cells. In addition, microarrays have greatly helped in the elucidation of the range of genetic responses of dendritic cells, macrophages, and other innate immune cells to different pathogens (table 2).^{28, 30, 32}

As well as the consistent response to all types of organisms (such as the upregulation of interferon-regulated genes), the association of clusters of genes expressed in response to different categories of organisms indicates that antigen-presenting cells have pre-wired signalling pattern responses to different pathogens.³⁰

Adaptive immunity

Microarrays have also helped to further the understanding of how B and T cell immunity develops.³⁵⁻³⁸ Genes are uniquely expressed during the various stages of B-cell differentiation...

...germinal centre B cells, which are a discrete stage of differentiation when B cells encounter antigen in secondary lymphoid tissue. They reported a unique gene-expression signature for this stage, including...

...expression profile resembled the resting state more closely than the 8 h profile.

Understanding the responses of the different types of immune cells is important; however, investigating each cell type separately may lead to a loss of information depicting the complexity of the coordinated molecular choreography of the intact in-vivo immune response to pathogens. Consequently peripheral blood mononuclear cells (PBMCs) including both lymphocytes and monocytes are often...

...analysis.^{42, 43}

Differences between hosts

Even in the absence of infection, gene expression in immune cells can vary. Using cDNA microarrays Whitney et al⁴⁴ reported that age, sex, time of...

...the blood all affected gene expression in healthy volunteers. Although they did not expose these immune cells to infective organisms, they compared the magnitude of global gene expression changes in samples...

...changes detected in patients with malignancy or bacterial sepsis.

Host-pathogen interaction studies

While the isolated study of either infectious organisms or host cells is revealing, the key to an infectious disease process is the interaction between the pathogen and the host.

Stereotyped responses

Analysis of genome-wide expression patterns in the host during infection provides an insight into...

...host recognises and processes a pathogen. Recent studies have shown a stereotyped range of host immune responses after infection with phylogenetically diverse organisms.

Diverse organisms

In a seminal study, by comparing the gene expression responses of dendritic cells (using Affymetrix arrays) to a bacterium (*E coli*), a virus (influenza A...

...how microarray studies can show the sequence of events and coordination of pathways involved in immune responses. Genes whose transcripts declined soon after pathogen contact include those involved in pathogen recognition and phagocytosis. Also at this stage there was upregulation of genes expressing cytokines, chemokines, and immune cell receptors (reflecting recruitment of other innate immune cells to the site of infection) and genes modulating the cytoskeleton, which the authors postulated...

...there was increased expression of transcription factors and signalling molecules involved in lymphoid tissue regulation, antigen processing, and presentation. By 18 h there was upregulation of chemokine receptor expression, thought to...

...species, suggesting that there was continued killing of organisms by dendritic cells. This common core response was independent of pathogen characteristics and occurred in a coordinated fashion modulating innate and adaptive responses.

Diverse bacteria

Boldrick et al⁴² found a core of 205 commonly expressed genes in PBMCs...

...genes included those with both systemic and local effects. Highly represented were genes encoding intercellular immunoregulatory and signalling molecules such as cytokines and chemokines. These genes are regulated by NFkappaB, which orchestrates both innate and adaptive immune responses. Gram-negative bacteria induced stronger expression than Gram-positive bacteria. In addition, Boldrick et al...

...in cell-cell adhesion, diapedesis, and leucocyte extravasation, and those involved in recognising bacteria and antigen presentation. Although repression of genes crucial to host defence seems paradoxical in this situation the authors proposed a deliberate programme of self-attenuation to ensure that antigen-presenting cells retain and present antigens only in the context of contact with a pathogen.

Differentiating between infectious agents

Through a...variety of organisms. This enables them to sense diverse pathogens, and make distinct pathogen-specific responses.

Whilst many host genes are expressed in common during bacterial, viral, and fungal infection, Huang...

...strains of *B pertussis* and *S aureus*. The same group also showed that different expression responses to the same strain of *B pertussis* depended on whether it was live or killed...

...it carried a toxin gene.⁴⁵

Microarrays can be used to differentiate between the host response to extracellular and intracellular parasites, and also between different intracellular parasites.^{32,46,47} For example, de Avalos et al⁴⁷ used cDNA microarrays to analyse gene expression in response to *Trypanosoma cruzi* infection and reported that while 106 genes were expressed at 24 h...

...by 2 or 6 h. This finding contrasted with a previous study investigating the host response to another intracellular pathogen, *T gondii*, where 63 known genes were upregulated by 2 h...

...be due to a parasite-dependent event that is required before the host

cell "sees" and responds to the invasion with gene transcription, thus showing the use of microarrays in advancing biological...

...fresh insights into the interaction between the pathogen and host by revealing global host expression responses to a range of pathogenic stimuli (table 4).

Host-pathogen interplay

Pathogens may manipulate host...

...support for pathogen replication and downregulation of MHC expression to allow pathogens to evade the immune system^{56,57} In addition, host defence systems induced on infection may be used by...

...example, infection with cytomegalovirus causes increased expression of PGE₂, which, while part of the inflammatory response of the host involving cell recruitment and activation, may also allow dissemination of the virus...

...the glycolytic and cholesterol biosynthesis pathways. While the cholesterol biosynthesis is likely to be a response to sterol scavenging by the organism, the upregulation of genes regulating the glycolytic pathway may be in response to an anaerobic environment resulting from cell starvation or stress response. This finding led the authors to hypothesise this as a metabolic reason for the finding...

...metabolic gene expression may therefore improve our understanding of pathogenesis.

Timing

The sequence of host responses is central to understanding immunopathogenesis. Early responses may indicate the activation of innate immune system function.^{30,45} Although fewer than 1% of all genes may respond within the first 2 h after infection, they could be crucial in initiating the immune response.⁴⁶ Some genes respond to secreted factors, and may be vital in the early stages of infection before the...

...cells taken during acute infection-allow global genomic investigation of individual susceptibility to infection, potential response to treatment, and ultimately prognosis. This ability to identify "genetic signatures" could, as previously described...

...with infectious diseases who are not distinguishable clinically but who will have different prognoses and responses to treatment. This model has been well established in studies of cancer.⁶⁰

Drug and...the future, it may be possible to establish the antimicrobial resistance pattern without needing to isolate or identify an organism

Drug effects on pathogens

Genomic analysis after antimicrobial treatment of infectious...

...An important use of microarrays is likely to be in the search for cell-surface antigens that are expressed at a particular time in a pathogen's lifecycle or infective process...

...host epithelial cells. They saw 189 upregulated genes, about 44% of which coded for cell membrane proteins. This knowledge enabled them to pursue a number of these proteins to establish their...

...receptor CCR5 was shown, suggesting a role for interferon alpha in progression of HIV-related immunodeficiency.

Toxicity can also be studied at a genetic level. In the above study on HIV...

...indications for a drug. For example, Goasduff et al 69 investigated the molecular mechanisms of the immunomodulatory drug murabidine in macrophages using oligonucleotide microarrays. As well as the expected changes in immune mediators and receptors, they saw upregulation of growth factors involved in bone formation, suggesting that...

...amount of data generated by microarray experiments is enormous. A simple experiment comparing stimulation of immune cells by two different bacteria in two individuals at three different time points requires at...

...including background fluorescence, different amounts of DNA at each spot location, differential efficiency of mRNA extraction, and differences between print tips and slides all require correction and normalisation that is undertaken...cellular or tissue site of expression, as well as the timing of expression as the immune response unfolds. Genes upregulated at the same time, to the same degree, and under the same...

...Pathologist at Royal Children's Hospital, Victoria, Australia; RR-B is Professor of Microbiology and Immunology at the University of Melbourne and Head of Microbial Research at Royal Children's Hospital...
SI DEBAR:

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DIALOG(R) File 457: The Lancet

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0000146531

USE FORMAT 7 OR 9 FOR FULL TEXT

Diarrhoea in children: an interface between developing and developed countries

Thapar, Nikhil; Sanderson, Ian R
 The Lancet vol. 363, 9409 PP: 641-53 Feb 21, 2004 DOCUMENT TYPE:
 PERIODICAL; Journal Article; Comparative Study LANGUAGE: English
 RECORD TYPE: New; Fulltext
 LENGTH: 13 Pages
 WORD COUNT: 11951

ABSTRACT:

...with pathogens employing ingenious mechanisms to establish disease. In the developed world, an upsurge in immune-mediated gut disorders might have resulted from a disruption of normal bacterial-epithelial cross-talk and impaired maturation of the gut's immune system. Oral rehydration therapies are the mainstay of management of gastroenteritis, and their composition continues...

TEXT:

...with pathogens employing ingenious mechanisms to establish disease. In the developed world, an upsurge in immunemediated gut disorders might have resulted from a disruption of normal bacterial-epithelial cross-talk and impaired maturation of the gut's immune system. Oral rehydration therapies are the mainstay of management of gastroenteritis, and their composition continues...

...to safe drinking water.

In the early 1980s, diarrhoeal disorders were the biggest child killers, responsible for an estimated 4.6 million deaths worldwide every year. Despite widespread use of oral...

...about 15% of all deaths attributable to diarrhoea in children younger than 5 years.5 *Vibrio cholerae* remains a major cause of epidemic diarrhoea, especially where sanitation is compromised after a...

...O1 strains of *V. cholerae*, previously thought to be non-pathogenic, have been identified as responsible for outbreaks of diarrhoeal disease.19

Rotavirus

Rotaviral infections account for up to 60% and...23 Group A rotaviruses and specifically the G1, G2, G3, G4, and G9 serotypes are responsible for most infections.24 Rotaviruses most commonly cause diarrhoea between the ages of 6-24...

...27 Neonatal infection is probably nosocomial and tends to be mild.23 Children develop natural immunity after repeated exposure.28-30 Rotavirus epidemics peak in the winter in temperate climates.23...

...intestinal organisms capable of most known commensal and pathogenic interactions between intestinal microflora and host. Antigenic classification is based on somatic (O) and flagellar (H) antigens, and the diarrhoea-causing forms are categorised into six groups (table 1).19,39 Estimates...

...s diarrhoea.44,45

Food allergies

A reproducible clinical reaction and evidence of a pathological immune reaction to ingestion of a particular food are needed before food allergies are confirmed, and...

...rare in developing countries? The gastrointestinal tract is continually involved in the uptake of food antigens;49 usually there is physiological oral tolerance to non-harmful antigens and pathological sensitisation is rare. The gradual loss of oral tolerance is probably the result of disordered maturation of the gut-associated immune system that follows from a decline in microbial stimulation. Food antigens most likely to cause an allergic response include cow's milk, soya and egg proteins, and nuts. A family history of atopy and

immunodeficiency is a risk factor. Food sensitive enteropathy sometimes follows an acute diarrhoeal illness.⁵⁰

Most...

...reactions are immediate onset (type I) or delayed onset (type IV), although type III IgG immune-complex mediated allergic reactions have been reported. Patients present with various responses from severe anaphylaxis and shock to mild manifestations of eczema or respiratory tract symptoms. Food...

...might need to exclude certain foods in severe allergy to prevent the transmission of food antigens. For children who are lactose intolerant or who cannot breastfeed, commercial formulae such as hydrolysates in which antigens such as cow's milk protein are modified, or elemental amino acid feeds are available.

Drugs...

...difficult cases with variable success. Such treatment includes mast-cell inhibitors and antihistamine preparations. Potent immunomodulators such as steroids and immunosuppressive agents have been used in severe refractory cases.⁵¹ Probiotics have also been shown to... of specified food materials from the latest meal. There is evidence for disordered small-intestinal motility⁵⁵ but the absence of nutritional compromise and the normal mouth-to-caecum time⁵⁶ points to...

...of intestinal carbohydrate and bile acid metabolism, allergic effects, toxic effects, and direct effects on motility.^{58,59}

Decreased absorption of water and electrolytes

Loss of functional absorptive area

Causes of...

...anxiety), drugs, and toxins have a direct effect on the enteric nervous system; thus, intestinal motility is increased, intestinal transit time is reduced, and there is poor absorption of water and substrates - all giving rise to diarrhoea. The responses designed to decrease intestinal transit are advantageous, however, with respect to enteric pathogens where they...

...any disruption can lead to increased leakiness of the epithelium and, if severe, results in mucosal ulceration and bleeding. There are four main mechanisms of epithelial disruption (panel 3).^{41,68...}

...enteric nervous system, part of the autonomic nervous system, can function independently to control intestinal motility and water and electrolyte fluxes, and there is evidence... of the enteric nervous system by releasing 5-hydroxytryptamine (5-HT) and other peptides from mucosal enterochromaffin cells. Then, the afferent limb of the neuronal reflex is stimulated through binding to... are exclusively breastfed.^{113,114} Breastmilk contains many protective factors that act at the intestinal mucosal surface to prevent microbial infection and enhance development of the immune system.¹¹⁵ Evidence strongly supports the promotion of breastfeeding for the first 4-6 months...

...¹¹⁶ Zinc and vitamin A are especially relevant to diarrhoea. Zinc has important roles in immunity and wound healing and vitamin A participates in the maintenance of epithelium.¹¹⁷ Zinc supplementation...

...be useful, but this does not mean that they should be used in every case.

Motility and other antidiarrhoeal agents

This group of drugs includes loperamide, opiates, bismuth subsalicylate, kaolin, smectite... of these medications is recommended for use in children with acute diarrhoea.^{125,128,129}

Immunomodulators

These agents modulate harmful and disordered immune responses, and include steroids and immunosuppressants such as azathioprine, ciclosporin, and methotrexate. Uses include severe enteropathies secondary to food allergy and...

...pathogens, and is vital in modulating interactions with the environment and the development of beneficial immune responses.134 136

Probiotics are live microbes characteristic of healthy normal human gut microflora, and include...

...mechanism of probiotic action, however, relates to the development, maturation, and regulation of mucosa-associated immune defences.46, 135- 137

Results of two meta-analyses, one of which looked specifically at...

...preventive role in reducing the frequency of diarrhoeal illnesses, possibly by stimulation of specific humoral responses, such as the production of specific IgA.46 The effect seems to be most prominent... and eczema.52, 53, 145 Probiotics such as *L rhamnosus* seem capable of reducing the immunogenicity of food antigens by partial hydrolysis. Elimination diets for such disorders supplemented with probiotics result in substantial improvements...

...local and systemic inflammation. This effect could be caused, in part, by modulation of the immunological response to prevent activation of T-helper-2 cells and future IgE dominant inflammation driven by immunological memory.46 Probiotics also seem to possess inherent anti-inflammatory components, which might be useful...to avoidance of infectious agents, it is recognised that the apparent upsurge in allergic and immune-mediated gut disorders might, ironically, be the result of an environment with fewer pathogens. With...

...diseases in the developing world.

Vaccines

Significant resources are being directed to the development of mucosal immunisation against a range of pathogens responsible for infectious diarrhoea. Such vaccines would act to interfere with one or more of the...

...block the action of elaborated toxins. However, work has been hampered by problems related to antigen delivery systems and adverse reactions in recipients.150

Rotaviral vaccines

Improvements in hygiene, sanitation, and...

...this global disease.

The epidemiology of rotaviral infections corresponds with the loss of the passive immunity acquired in utero and progressive acquisition of protective immunity following repeated exposures thereafter. There is evidence in children and adults that rotavirus infection results in both serum and intestinal antibody responses, which protects against severe diarrhoea on reinfection. Higher serum levels of both IgA and IgG...

...diarrhoea have much lower concentrations of these antibodies.28, 30, 151 In the course of immunological studies and epidemiological work, specific rotaviral epitopes (VP7 and VP4) for the production of serotype...

...some hope in the ever-present struggle between humans and viruses. The new challenges of immune-related gut diseases are likely to become globally prominent with continued attention needed to focus on the interaction between host and bacteria and the evolution of immunity. Probiotics go some way to addressing this shift in disease pattern, but are unlikely to...

SI DEBAR:

...and giardia

Other infections, usually in the presence of specific risk factors such as malnutrition, immune deficiency (including HIV, post measles), associated illnesses (pneumonia, urinary tract infections), or mucosal injury

Congenital disorders of digestion and absorption including:

Exocrine pancreatic insufficiency (eg, cystic fibrosis)

Enteropathies...

...mediators

Inflammation

Usually via upregulation of proinflammatory cytokines and infiltration by host inflammatory cells, a response that eliminates pathogens and prevents bacteraemia at the expense of damage to the mucosa. In...

CAPTIONS:

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17/3, K/39 (Item 4 from file: 457)

DIALOG(R) File 457: The Lancet

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USE FORMAT 7 OR 9 FOR FULL TEXT

Cholera

Sack, David A; Sack, R Bradley; Nair, G Balakrish; Siddique, A K
The Lancet vol. 363, 9404 PP: 223-33 Jan 17, 2004 DOCUMENT TYPE:
PERIODICAL; Journal Article LANGUAGE: English RECORD TYPE: New;
Fulltext

WORD COUNT: 11312

ABSTRACT:

...number of cases associated with El Tor during a short period.20
Intestinal infection with Vibrio cholerae results in the loss of
large volumes of watery stool, leading to severe and...

TEXT:

Intestinal infection with Vibrio cholerae results in the loss of
large volumes of watery stool, leading to severe and...

...European cities by the early 1830s. In 1831, the pandemic reached the UK
and the response was important in that it led to the establishment of
local Boards of Health and...

...continuing up to 1925, involved Africa, Australia, Europe, and all the
Americas. The causative agent, Vibrio cholerae, was not identified
until 1884 in Kolkata during the fifth pandemic.5 Why the...

...agent was a biotype of V cholerae serogroup O1 called El Tor. It was
first isolated in 1905 from Indonesian pilgrims travelling to Mecca
at a quarantine station in the village...25,29 The severity of the
infection depends on many factors, especially including local intestinal
immunity (from previous natural exposure or vaccination), the size of
the inoculum ingested, the adequacy of...intracellular movement of genetic
determinants of resistance to antimicrobial agents. Apart from the novel O
antigen, V cholerae O139 strains that emerged in late 1992 carried a
novel conjugative, self-transmissible...

...classified by biochemical tests and is further subdivided into
serogroups based on the somatic O antigen. The O antigen shows
enormous serological diversity, with over 200 serogroups.63 Only the O1 and
O139 serogroups...

...extraintestinal infections, including wound infections and acute sepsis, especially in people with liver disease or immunosuppression.⁶⁷

V cholerae survives well in faecal specimens if kept moist, but if there is...

...darting" organisms that are halted by the addition of O1 or O139 antiserum.⁶⁸ Rapid immunoassays are also available.^{69,70}

The rapid immunological assays can be especially useful for monitoring of epidemiological patterns in remote areas where cultures...

...subdivided into two major serotypes, Ogawa and Inaba. Ogawa strains produce the A and B antigens and a small amount of C, whereas Inaba strains produce only the A and C antigens. A third serotype, Hikojima, produces all the three antigens but is rare and unstable.

V cholerae strains of the same biotype and serotype can...

...ribotypes have been especially useful for molecular epidemiological studies. For example, molecular analysis of epidemic isolates of V cholerae between 1961 and 1996 in Bangladesh revealed clonal diversity among strains isolated during different epidemics.^{80,81} These ... cell wall, that attach to receptors on the mucosa,⁸² and by the bacterium's motility, which helps to penetrate the mucus overlying the mucosa. V cholerae adhering to the M...

...without causing any tissue damage are shown in figure 3. Concentrations of vibrios on the mucosal surface rapidly increase to 10^{sup 8} or 10^{sup 7} cells per g. With...

...of vibrios closely attached to the mucosa, enterotoxin can be efficiently delivered directly to the mucosal cells.

Formerly cholera was thought to cause sloughing of the intestinal mucosa by an inflammatory...

...a lysogenic bacteriophage designated CTX(Phi) that carries the genes encoding cholera toxin, and the vibrio pathogenicity island (VPI), which carries genes for the pilus colonisation factor TCP.^{82,94}

The...as the mannose-fucose-resistant cell-associated haemagglutinin, the mannose-sensitive haemagglutinin, and some outer-membrane proteins are suspected from findings in animals to have roles in increasing adhesion and colonisation...

...inactivate a set of genes including those encoding colonisation factors or toxins as an appropriate response to changing environmental conditions. ToxR, a 32 kDa transmembrane protein, binds to a tandemly repeated...

...through the toxR regulon shows that the organism has developed a mechanism of sampling and responding to its environment. ToxR regulates the expression not only of ctxAB but also of at...

...cholerae O1 E1 Tor strain. This transfer occurred in the region that brings about O-antigen biosynthesis.¹¹⁶⁻¹¹⁸ DNA hybridisation analysis of the O-antigen biosynthesis gene in O139 showed that it has homology with the gene of several non...

...¹²³ However, unlike V cholerae O1, serogroup O139 has a capsule distinct from the lipopolysaccharide antigens and has 3,6-di-deoxyhexose (abequose or colitose), quinovosamine, and glucosamine, and traces of tetradecanoic and...

...of chironomids.¹³² Biofilm formation¹³³ and entry into a viable but non-culturable state in response to nutrient deprivation¹³⁴ are

thought to be important in facilitating environmental persistence within natural aquatic...

... understood.

Although *V. cholerae* is part of the normal estuarine flora, toxigenic strains are mostly isolated from the environment in areas probably contaminated by infected individuals. Environmental isolates from areas that are distant from regions of infection do not generally have the cholera... it no longer needed it, and they did not like the side-effects. Thus, the whole-cell injectable vaccine is no longer recommended for any purpose, though it is still licensed.

New...

... along with the cholera B subunit, and the vaccine therefore stimulates both antibacterial and antitoxic immunity. Two doses are given 1-6 weeks apart. 139 The other vaccine (Orchol) is an...

... risk.

The new oral vaccines will not prevent all cases of cholera because local intestinal immunity can be overcome with a high inoculum but they should lower the risk by as...

SI DEBAR:

... 223-33

Search strategy

We carried out a PubMed search with the terms "cholera" and "*Vibrio cholerae*" from 1966 onwards and selected references that were pertinent to this review. These articles...

CAPTIONS:

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THIS IS THE FULL-TEXT.

17/3, K/40 (Item 5 from file: 457)

DIALOG(R) File 457: The Lancet

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USE FORMAT 7 OR 9 FOR FULL TEXT

Assessment of travellers who return home ill

Spira, Alan M

The Lancet vol. 361, 9367 PP: 1459-69 Apr 26, 2003 DOCUMENT TYPE:

PERIODICAL; Journal Article LANGUAGE: English RECORD TYPE: New;

Fulltext

WORD COUNT: 8900

ABSTRACT:

...acute traveller's diarrhoea are due to bacteria, mainly *Escherichia coli*, *salmonella*, *shigella*, *Campylobacter jejuni*, *Vibrio parahaemolyticus*, *Bacillus cereus* (especially associated with rice), *Staphylococcus aureus*, and *clostridia*. 50, 66 *Legionella pneumophila*...

...also noted for presenting with diarrhoea and *Yersinia enterocolitica*

infection can mimic acute appendicitis. 67 *Vibrio cholerae* infection is not commonly seen in travellers, although in 1992, 75 passengers on an ...

...fever, or mucus in the diarrhoea the illness is defined as dysentery, in which the mucosal lining of the intestines is invaded. Organisms likely to cause dysentery are shigella, salmonella, campylobacter...

TEXT:

...very different to those in patients living in endemic areas, because the visitor will be immunologically naive. Compared with the local population in the country visited, the traveller might undergo more...the presence of malaria. However, rash and lymphadenopathy are not normally seen. Travellers who lack immunity to malaria are most likely to suffer severe disease, which can entail cerebral malaria (unrousable...)

...*P falciparum* and *P vivax*, they do not identify acute infection in people with some immunity or *P malarias* or *P ovale*. 24-26 Thus, microscopy is essential in making a...and are typically most severe in children. Diagnosis is made clinically and confirmed with virus isolation, dengue virus antigens, increased antidengue IgM antibodies, or a four-fold increase in IgG from paired acute and...acute traveller's diarrhoea are due to bacteria, mainly *Escherichia coli*, salmonella, shigella, *Campylobacter jejuni*, *Vibrio parahaemolyticus*, *Bacillus cereus* (especially associated with rice), *Staphylococcus aureus*, and clostridia. 50, 66 *Legionella pneumophila*...

...also noted for presenting with diarrhoea and *Yersinia enterocolitica* infection can mimic acute appendicitis. 67 *Vibrio cholerae* infection is not commonly seen in travellers, although in 1992, 75 passengers on an ...

...fever, or mucus in the diarrhoea the illness is defined as dysentery, in which the mucosal lining of the intestines is invaded. Organisms likely to cause dysentery are shigella, salmonella, campylobacter...

...presents with a similar pattern, *Cryptosporidium* spp, can cause chronic and even fatal diarrhoea in immuno-compromised people. Chronic malabsorption can also be due to helminthic species such as *Strongyloides* spp...on antibiotics, stool samples should also be cultured for *C difficile* and tested for its antigens. Further testing will vary with the severity and duration of diarrhoea.

Skin

Skin disorders are W 135, and Y. Pre-travel immunisation against *N meningitidis* does not rule out infection, since the quadrivalent vaccine does not cover...

...increased susceptibility or worsening clinical illness in AIDS patients. 97 The diagnosis is confirmed with motile trypanosomes in the blood on fresh specimens or giemsa-stained blood or cerebrospinal fluid.

Laboratory...

SI DEBAR:

...haematocrit stains

* Stool haemoccult

* Stool culture and sensitivity for enteric pathogens

* Stool serology for giardia antigens as well as *C difficile*

antigen. Blood tests should also include complete blood count with a differential, amoebic serology and chemistries...

CAPTIONS:

CITED REFERENCES:

...Med Hyg 2000; 63: 76-79.

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parasitaemia as shown...after infection with *Yersinia enterocolitica*, diagnosed by serotype specific antibodies and antibodies to *Yersinia* outer membrane proteins. Infection 1997; 25: 317-19.

68 Centers for Disease Control and Prevention. Cholera-Peru...
THIS IS THE FULL-TEXT.

17/3, K/41 (Item 6 from file: 457)

DI ALOG(R) File 457: The Lancet

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0000141893

USE FORMAT 7 OR 9 FOR FULL TEXT

Controlling infection by tuning in and turning down the volume of bacterial small-talk

Camara, Miguel; Williams, Paul; Hardman, Andrea

The Lancet Infectious Diseases vol. 2, 11 PP: 667-676 Nov 2002

DOCUMENT TYPE: PERIODICAL; General Information LANGUAGE: English

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TEXT:

...40% in 2000.2 Of particular concern is the recent report of the first clinical isolate of *S aureus* to be classified as completely resistant to vancomycin,3 which is one...

...ability of an individual bacterial cell to sense information from other bacterial cells and, in response, to coordinate the expression of virulence genes when a sufficient population size has been reached...

...quorum), is reached.4,5 Transduction of the signal depends on the activation of a response regulator protein, which ultimately brings about the coordinated changes in gene expression needed to mount a specific population response.

In recent years there has been an explosive increase in quorum sensing research. The potential...

...distinct signals and many organisms use complicated regulatory hierarchies that control signal production, detection, and response.
.6,7

The chemical "languages" of Gram-negative bacteria
In Gram-negative bacteria, although several...

...been seen in *Escherichia coli* nor *Salmonella typhimurium*, although the latter has been reported to respond to exogenous AHLs suggesting that they can at least tune in to this signalling language...

...binds to and activates the transcriptional regulator LuxR protein to form a complex that is responsible for activating or repressing the target genes.4 In some cases, the gene that encodes *Vibrio* species and a putative novel class of AHL synthases (HdtS) in *Pseudomonas fluorescens* have been...

...cause infections of the blood, skin, eye, gut, respiratory, and genitourinary tract systems in patients immunocompromised by surgery, cytotoxic drugs, or burn wounds. In particular, it is a problem in cystic ...

...synthesis of N-(3-oxododecanoyl) homoserine lactone (3-oxo-C12-HSL) (figure 1E), RhII is responsible for generating N-butanoyl homoserine lactone (C4-HSL) (figure 1D).23,24 Importantly, the two AHL-dependent...

...its own right since this quorum sensing signal molecule has been shown

to have proinflammatory, immune modulatory, and vasorelaxant properties³⁷⁻³⁹ 3-oxo-C12-HSL modulated both T-cell and B...

...peritoneal macrophages.³⁷ Furthermore, 3-oxo-C12-HSL mediated switching of the T-helper-cell response from the antibacterial Th1 response (characterised by interleukin 12 and interferon gamma production) to a Th2 response. Since T-cell responses constitute an important component of the host immune defense against *P aeruginosa*, such signal-molecule-mediated suppression of T-cell activity is likely...

...that host cardiovascular function may be modulated, or influenced, by bacterial quorum sensing molecules. In isolated porcine coronary arteries, 3-oxo-C12-HSL caused a concentration-dependent relaxation effect on thromboxane mimetic-induced...

...the genes that encode for virulence determinants in *P aeruginosa*, but also in modifying host responses to maximise its own chances of survival and proliferation by capitalising on the increased supply...

...*P aeruginosa* and thus reduce the production of AHL-regulated virulence determinants-have recently been isolated from *Bacillus* species.⁴² However, AiiA-type enzymes seem to inactivate AHLs by lactonolysis⁴³ and...

...concentrations of LuxR protein within the cell.⁵¹ This effectively interferes with the reception and response to AHLs. It is likely that these halogenated furanones will be toxic to higher organisms...peptide (figure 1H) is produced by the processing of AgrD by AgrB, which is also responsible for the export of the signal molecule (figure 4). The peptide interacts with the AgrAC two component system, in which AgrC is the membrane-bound sensor kinase and AgrA is the cytoplasmic response regulator. The system is activated through the binding of a quorum sensing peptide to AgrC...
...results in the production of the effector molecule, an RNA species termed *RNAIII*, which is responsible for triggering the agr response.¹²

S aureus strains can be subdivided into four groups (I-IV), in which the AgrD-derived peptide pheromone from strains of one group can cross-activate the agr response, and thus virulence, in other strains of that group but inhibit the agr response of members of other groups.⁶² For instance, the addition of a group III peptide...

...peptide resulted in a reduction in virulence of the group I strain in a mouse subcutaneous abscess infection model.⁶⁰ For *S epidermidis*^{64,65} and *Staphylococcus lugdunensis*⁶² only one peptide pheromone...

...inhibitors of self.^{60,63} Furthermore, while the *S epidermidis* peptide thiolactone inhibits the agr response in *S aureus* groups I, II, and III but not group IV, only the group IV peptide was able to inhibit the *S epidermidis* agr response.⁶⁶

It seems that staphylococcal species themselves have evolved an innate mechanism for warding off...

...However, of crucial importance when considering the design of novel antagonists that inhibit the agr response is that an inhibitor of one agr group may be a potent activator of virulence...*aureus*. Moreover, the transcription of *RNAIII*, which is the ultimate effector molecule of the agr response,¹² is also inhibited by 3-oxo-C12-HSL. Thus, the possibility arises that that...

...is reliant on host defences, it is unlikely that they will be suitable to treat immunocompromised patients and perhaps, in general, a prophylactic rather ...of changes in population density, enabling bacteria

to act as a community rather than in isolation, is a far more complex event than initially anticipated. Quorum sensing systems can no longer be considered in isolation, as perhaps best exemplified by the hierarchical arrangement of multiple quorum sensing systems, which regulate ...

... Sciences, University of Nottingham Nottingham UK; PW is also at the Institute of Infections and Immunity, Queen's Medical Centre, University of Nottingham

Correspondence: Dr Andrea Hardman, The Boots Science Building...

SI DEBAR:

CITED REFERENCES:

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THIS IS THE FULL-TEXT.

17/3, K/42 (Item 7 from file: 457)
DI ALOG(R) File 457: The Lancet
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0000124210

USE FORMAT 7 OR 9 FOR FULL TEXT

Oligosaccharide anti-infective agents

Zopf, David; Roth, Stephen

The Lancet vol. 347, 9007 PP: 1017 Apr 13, 1996 DOCUMENT TYPE:

PERIODICAL; Feature LANGUAGE: English RECORD TYPE: New; Fulltext

LENGTH: 5 Pages

WORD COUNT: 3834

ABSTRACT:

In theory, specific human oligosaccharides should be effective, safe, non-immunogenic alternatives to, or supplements for, conventional antibiotics. The history of research on pathogen/carbohydrate interactions

TEXT:

...The first line of defence against these infectious diseases consists of decoy oligosaccharides in the mucous layer that lines all exposed epithelial cells and in saliva, tears, urine, sweat, and breast...

...broad variety of infectious diseases. In theory, specific human oligosaccharides should be effective, safe, non-immunogenic alternatives to, or supplements for, conventional antibiotics. Furthermore, because oligosaccharides are not bactericidal, resistance to...

...Influenza viruses and many other human pathogens possess a surface protein that complexes with specific, membrane-bound oligosaccharides on human cells.³ The non-covalent protein/carbohydrate interactions at individual sites...

...closely parallels their capacities to recognise and attach specifically to epithelial cells that line the mucous membranes. To colonise a mucosal surface, a microbe must resist clearance via mechanical flow of secretions, avoid local immune defences, and obtain adequate nutrition in an environment highly regulated by specialised host epithelial cells. Normally functioning human mucosal surfaces effectively clear hundreds of non-adherent microbial species every day.

The pathogen proteins (called...

...less suitable as drugs because of their large size (50 kDa or so) and potential immunogenicity. Thus, the most attractive strategy for developing antiadhesive therapeutic agents is to use soluble forms of the human oligosaccharide component, which are small (about 1 kDa) and non-immunogenic.

Host range and tissue tropism

The vast majority of specific adhesion events between pathogen and...

...microbial surface proteins that recognise carbohydrate chains on glycoproteins or glycolipids that are anchored onto mucosal surface membranes.⁶ Many bacteria produce hair-like pili tipped with adhesion molecules that can...

...to chemically unique carbohydrate receptors.⁷ Selective expression of these receptors on cells that line mucosal surfaces provides a molecular basis for the well-known host range and tissue tropism of common pathogens. For example, up to 90% of *Escherichia coli* strains isolated from the urinary tract of children with acute pyelonephritis are coated with P-pili that...

...tract.⁸ Differences in the fine specificity of PapG adhesins expressed by *E. coli* strains isolated from man and the dog correlate with species-related differences in display of globoseries glycolipids...

...class of pili determines virulence and host range of enterotoxigenic *E. coli* K99, an organism responsible for outbreaks of life-threatening diarrhoea in piglets, calves, and lambs. The target most avidly...

...generated, molecular signals commonly induce the regulated expression of adhesins and other gene products.¹¹ *Vibrio cholerae*, as it passes through the human stomach, utilises a heat shock sigma factor to turn off transcriptional expression of pili, while increasing motility and chemotaxis. When these vibrios encounter conditions more favourable for colonisation in the lower gut...lacking, phase variants that fail to retain expression of adhesins and other factors required for mucosal colonisation may emerge.

Streptococcus pneumoniae, which colonises 40% of individuals without causing symptoms, can undergo...

...and infectious transparent phenotype to a poorly adhesive, non-colonising opaque phenotype.^{12,13} Freshly isolated organisms bind buccal epithelial cells by specific attachment to the carbohydrate sequence Gal(beta)14...

...host cells, resulting in increased surface density of adhesion receptors.

Pseudomonas aeruginosa produces neuraminidase in response to the hyperosmolar environment of the lungs of patients with cystic fibrosis. 16 Neuraminidase cleaves...

...of carbohydrate adhesion receptors. Heritable differences in the ABO, Lewis, and P carbohydrate blood group antigens lead to differences in expression of carbohydrate receptors in extrahaematopoietic tissues, especially epithelial cells lining...

...4Gal receptors that support attachment of uropathogenic P-piliated *E. coli*. Careful comparison of glycolipids extracted from the vaginal cells of ABO secretors and non-secretors revealed that the fucosylation of ...

...bind efficiently to a microbial adhesin, 6 but is more likely to be toxic and immunogenic than is a carbohydrate homologue. An analogue can be designed to fit a particular carbohydrate binding...

...or lectin but it is unreasonable to expect the analogue to be considered "self" by immune cell receptors.

Monovalent vs polyvalent

The strength of intercellular adhesions that are mediated by non...

...other hand, polyvalent compounds are no longer natural human molecules and may be toxic and immunogenic.

Oligosaccharide delivery

Short-chain oligosaccharides are typically highly water-soluble, and extremely stable to heat and...that naturally adhere via type 1 fimbriae to branched high mannose chains N-linked to membrane glycoproteins. 6 Globotetraose was used in mice 21 and Gal(α1-4Gal(β1-4Glc in...

...dose of enterotoxigenic *E. coli* K99. 23

Human milk paradigm

The protective effects of non-immunoglobulin fractions of human milk against infections of the gastrointestinal, respiratory, and urinary tracts during the...

...to 20 mg/kg beyond 10 weeks. 27 Thus, nature bathes the nasopharyngeal and gastrointestinal mucosal surfaces of nursing infants with high concentrations of oligosaccharides whose capacity to block adhesion of... by a single receptor homologue can be sufficient to tip the complex microecological balance toward mucosal clearance in vivo.

For example, an infective dose of a strain of *S. pneumoniae* that...

...adaptive molecular fit between a microbial adhesin and a carbohydrate sequence characteristically displayed by host mucosal cells.

Organisms cleared by this means from a mucosal surface have, in effect, simply failed to find a host. The likelihood of selecting a...

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DESCRIPTORS: Medical immunity;

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DIALOG(R) File 457: The Lancet

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USE FORMAT 7 OR 9 FOR FULL TEXT

Cholera

Sanchez, Jose L; Taylor, David N

The Lancet vol. 349, 9068 PP: 1825-30 Jun 21, 1997 DOCUMENT TYPE:

PERIODICAL; Feature; JOURNAL ARTICLE; Comment LANGUAGE: English

RECORD TYPE: New; Fulltext

LENGTH: 6 Pages

WORD COUNT: 5836

TEXT:

... since surveillance began. October, 1992, saw another unprecedented epidemiological event; a new epidemic strain of Vibrio cholerae emerged in India and Bangladesh. 3 This cholera toxin (CT)-producing strain was the...

... it has since been classified as V cholerae 0139 Bengal. 3 The lack of cross-immunity between the Bengal strain and other O1 cholera strains led to major epidemics of cholera...

... stools are not cultured for V cholerae.

Microbiology of V cholerae

V cholerae is a motile, curved, gram-negative bacillus, first described in 1854 in Italy by Filippo Pacini. 3 In...

... species. 14 Of the 139 serogroups, as determined by the composition of the major surface antigen of the cell wall (O), only two, O1 and O139, have been associated with epidemics; these two serogroups produce cholera toxin, which is responsible for the fluid secretion. Other serogroups have only been associated with sporadic cases and small...

... and Hikojima, based on quantitative differences of factors A, B, and C of the O antigen. V cholerae O1 strains are also divided into two biotypes, classical and El Tor. Isolates from the third pandemic (1852-59) to the sixth (1899-1923) were caused by the...

... O1 biotype El Tor, but there is a mutation in the genes producing the O antigen. 16 O139 strains can produce a polysaccharide ... introduction of V cholerae in non-endemic areas where most of the population is non-immune. 18, 19 Under these circumstances the attack rates can be as high as 10% and...

... the epidemic to an endemic phase occurs after a large proportion of the population is immune or semi-immune. Previous immunity decreases illness in adults so higher attack rates are seen in children and in women...

...are present, have indicated that infection with classical organisms provides more potent and long-lasting immunity than infection with El Tor. In Peru, where outbreaks were caused exclusively by V cholerae...

...4500 cases in 1996 and this decrease was at least in part due to heightened immunity. During the endemic phase secondary transmission of cholera occurs, principally by intrafamilial spread of infection...

...living bacterial flora in estuarine areas. By contrast, V cholerae 01 is very difficult to isolate unless there is cholera in the population. The persistence of V cholerae within the environment...

...rise in the population of freeliving V cholerae. The periodic introduction of such infectious environmental isolates into the human population, through ingestion of undercooked shellfish and seafood, is probably responsible for isolated foci of endemic disease in the US Gulf Coast and Australia and for the clusters stuporous with sunken eyes and cheeks and dry mucous membranes. Decreased skin turgor (skin-pinch sign) is found in all such cases. Urine flow...

...storage containers is important in maintaining the water supply.

Recent advances in vaccine development

Parenteral, whole-cell cholera vaccines have been in use since the late 19th century. Controlled trials in the...

...SBL Vaccin AB), developed in the late 1980s, was also found to be safe and immunogenic in volunteers.⁴ Immunity is conferred 7-10 days after the second dose. This oral vaccine, given in two...

...inactivated vaccines is the need for two or three doses, 1-2 weeks apart. If immunity could be obtained more rapidly, a vaccine could be considered as an option for immunisation in the military and/or for travellers and for the control of threatened cholera epidemics...

...103-HgR (Orchol Berna; Swiss Serum and Vaccine Institute, Berne, Switzerland). This vaccine confers an immune response (and protection in challenged volunteers) within 8 days.⁴ It is safe and produces after one dose, in the immunologically naive individual, a vibriocidal immune response that approximates natural infection.

In the volunteer challenge model, CVD 103-HgR produces higher protection...0139 among all age groups in areas where V cholerae 01 is endemic indicates that immunity to 01 type is not protective against 0139.⁴ Epidemiological and laboratory studies suggest that natural immunity to 01 is not protective against 0139,⁴ and this has been confirmed in challenge...

...illness seen with this new strain and its potential to cause large epidemics among non-immune adults mean that attenuated V cholerae 0139 type vaccines are needed urgently. Such vaccines are...

...is that oral cholera vaccines, killed and live, will become readily available for use in immunisation programmes in developing countries,⁴⁹ and for travellers, expatriates, and military personnel. Other possibly important...

...3501, APO AA 34030-3501 (J L Sanchez MD); and Division of Communicable Diseases and Immunology, Walter Reed Army Institute of Research, Washington, DC, USA, and US Naval Medical Research Institute...

SI DEBAR:

CITED REFERENCES:

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17/3, K/44 (Item 1 from file: 266)

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IDENTIFYING NO.: 0203098 AGENCY CODE: AGRI C

Rapid Immunoassay for the Detection of the Bacterium Producing Necrotizing Hepatopancreatitis in Cultured Penaeid Shrimp quality control

ASSOCIATE INVESTIGATORS: Houghton, R. L.

PERFORMING ORG.: InBios International Inc, Seattle, WASHINGTON 98021

Rapid Immunoassay for the Detection of the Bacterium Producing Necrotizing Hepatopancreatitis in Cultured Penaeid Shrimp

...SUMMARY: that is time consuming, expensive and requiring specialized equipment. Rapid testing with a low cost immunoassay device would enable early detection by farmers at the site of aquaculture by permitting monitoring of brood stock as well as cultured shrimp. This could lead to a more rapid

response for controlling the infection by allowing intervention before they become lethargic and anorexic and less...

... Tucson, AZ. The rapid assay will be based on a lateral flow sandwich assay using membrane bound solid phase monoclonal antibody capture and a mobile phase of additional monoclonal colloidal gold...

... g expression cloning and western blotting and sequence analysis will be used to identify the antigens targeted by the available monoclonal antibodies. We will establish basic assay conditions and sample preparation methods for this functional, immunochromatographic, lateral flow assay for detection of NHP related bacteria using monoclonal antibody sandwich immunoassay in combination with fecal or dissected hepatopancreas samples from shrimp. Tests will be performed to...

... infected and non infected shrimp as well as samples with other bacterial infections e.g. *Vibrio* sp, *Campylobacter* sp and *Spiroplasma* sp. It is also planned to initiate scale up of...

... as well as the development of recombinant protein(s) for use as control material in immunoassay development and quality control. PR Necrotizing Hepatopancreatitis Bacterium (NHPB) in shrimp feces or hepatopancreas (HP...

... the antibodies functioned in ELISA to detect NHPB and hit different epitopes on the target antigen. This was the case and optimal results were obtained using 3D6 as the capture antibody...

... Membranes were sprayed with 3D6 and the 4A2 antibody was labeled with colloidal gold. HP extracted samples were tested and were positive at a 1:320 dilution of HP from infected...

... pathogen free shrimp. Further optimization is necessary to increase intensity of lines and in sample extraction methods. Fractionation of HP's on percoll was performed to try and further isolate the antibody reactive fractions. PCR reactions showed that the bacteria (free and vegetative forms) were present and electron

microscopy (EM) indicated that the most reactive fraction was enriched for flagella. These fractions were evaluated in ELISA, rapid test and immunodot assay. All tests indicated higher activity and greater titer in the flagella enriched fraction. Initially both of the two antibody cell lines needed recloning which was achieved...

... lines and antibodies were affinity purified and tested in the dot blot assay with NHPB antigen

DESCRIPTORS: immunoassay; speed; aquaculture; shrimps; bacterial diseases (animals); hepatopancreas; necrosis; disease control; disease detection; disease diagnosis; penaeus; molecular biology; broodstock; intervention; prototypes; vibrio; campylobacter; spiroplasma; quality control

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Georgia Journal of Science, 66, 1, 28(9)

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PUBLICATION FORMAT: Magazine/Journal ISSN: 0147-9369 LANGUAGE: English

RECORD TYPE: Fulltext TARGET AUDIENCE: Academic

WORD COUNT: 5396 LINE COUNT: 00455

TEXT:

PROSTATE CANCER AND CONSTITUTIVE EXPRESSION OF IMMUNOSUPPRESSIVE CYTOKINES AND CHEMOKINES, Godwin A. Ananaba* (1), K. Gordon (1), G. Ifere A. Campbell...

... Disease Control & Prevention, Atlanta, GA 30333. Cytokines and chemokines and their cognate receptors are essential immune effector molecules that are known to be involved in tumor progression. The specific cytokines and chemokines in particular are generally immunosuppressive and have been reported to be elevated in a large number of advanced tumors and...

... prostate tumor cell lines may explain a possible mechanism for them to negatively modulate the immune response and support their metastatic potential. Cytokines and chemokines may be used as potential diagnostic biomarkers...

... sexually transmitted disease. Vaccinology strategies are attempting to produce an effective vaccine that would confer immunity against genital chlamydial infection. Our strategy is to develop of a vaccine scheme that utilizes a commensal bacteria as a live delivery vehicle of chlamydia antigens to the immune system. Lactobacilli are of the normal flora of the human genital and urinary tracts. We...

...a vaccine utilizing lactobacilli as a live delivery vehicle will produce significant quantities of chlamydia antigen and induce mucosal, humoral and cell-mediated immune responses. In our laboratory, a plasmid construct DNA pGKOMP1 harboring the omp1 gene of *C. trachomatis* which encodes the major outer membrane protein has been achieved. We developed the recombinant plasmid using plasmid pGK12 and a multiple...

...towards other infectious diseases. Supported by NIH grants GM08247 and A141231.

THE MODULATORY EFFECT OF MUCOSAL ADJUVANTS ON THE EFFICACY OF A RECOMBINANT VOG-BASED CHLAMYDIAL VACCINE, F. O. Eko (1), E...

...tested the hypothesis that co-delivery of an rVOG-based chlamydial vaccine with the potent mucosal adjuvant, CTA2B will enhance its protective ability. Thus, rVOG vector-based subunit vaccines expressing the chlamydial major outer membrane protein, MOMP alone (rVOG-MOMP) or genetically fused to CTA2B (rVOG-MOMP/CTA2B) were constructed...

...evaluated in a mouse model of genital infection. Groups of female C57BL/6 mice were immunized by the intramuscular, intravaginal and transcutaneous routes with the vaccine constructs and humoral and cell-mediated immune responses were evaluated. In addition, the protective efficacy of the vaccine constructs against genital challenge with...

...evaluated. Results indicated that co-expression of chlamydial MOMP with CTA2B boosted the Chlamydia-specific immune responses irrespective of the route of immunization and conferred a greater degree of protection than the rVOG-MOMP construct. These results indicate that incorporation of mucosal adjuvants in the rVOG delivery platform can enhance the protective immunity of rVOG-based chlamydial vaccines.

EFFECT OF ESTROGEN ON TGASE1 EXPRESSION IN IMMATURE MOUSE VAGINAL...

...skin development, only preliminary studies have been carried out to investigate TGase1 expression in hormone-response epithelia such as vaginal tissue. Recent experiments in our laboratory have demonstrated that TGase1 is...

...sections of vaginal tissue will then be analyzed for the presence of TGase1 protein by immunohistochemistry utilizing a TGase1 monoclonal antibody. This study may provide valuable insight into the mechanism by which the expression of TGase1 is regulated in vaginal epithelium

PERIPLASMIC TARGETING OF CHLAMYDIAL OUTER MEMBRANE PROTEIN PORB ON THE RECOMBINANT VIBRIO CHOLERAE GHOSTS OPTIMIZED ANTIGEN EXPRESSION AND PROTECTS MICE AGAINST CHLAMYDIAL INFECTION, Daniel M.N. Okenul, E. E. Ekong1, Q...

...GA, Clark Atlanta University, Atlanta, GA, Centers for Disease Control & Prevention, Atlanta, GA. The recombinant *Vibrio Cholerae* ghost (rVOG) platform is a suitable delivery vehicle for targeting chlamydial antigens to the immune system leading to significant protective immunity. We hypothesized that the moderate degree of protection obtained in our earlier study may be due to the limited expression of chlamydial proteins in the inner membrane of VOG and inadequate presentation of the antigens to the immune system. Since periplasmic targeting of antigens has been shown to be effective in delivering heterologous antigens, we investigated whether the expression of chlamydial outer membrane protein, PorB, in the periplasm of VOG would lead to a robust antigen expression. Thus, PorB was expressed in the periplasmic space of VOG using the vector pMALp2x...

...the maltose-binding protein. Western blot analysis showed a high level of PorB on rVOG. Immunization of mice with rVOG-PorB resulted in the induction of a robust protective Th1 and secretory antibody responses. Significant levels of CD28, CD40L, CD80 and CD86 were also detected in mice immunized with rVOG-PorB. Immunized animals resolved their infection two weeks post-challenge. Thus, targeting PorB to the periplasmic space of VOG significantly increased its level of expression and the amount of antigen presented to the immune system leading to an enhanced anti-chlamydial vaccine efficacy.

CHOLESTEROL ACTIVATES THE EXPRESSION OF ANDROGEN...

...expression may be of therapeutic importance especially in androgen unresponsive prostate cancer.

ASSOCIATION OF HOST IMMUNOGENETICS AND SEXUALLY TRANSMITTED

INFECTIONS ON REPRODUCTIVE HEALTH, Jayanti Mani a-Pramani k (1),(3), Shilpa Kerkar (1...

...India, (3) Morehouse School of Medicine, Atlanta, GA. Host genetic diversity i.e., human leukocyte antigen (HLA) polymorphisms is believed to contribute to the spectrum of clinical outcomes in different infections...

...with different reproductive manifestations.

A SURVEY OF VANCOMYCIN RESISTANCE IN ENTEROCOCCUS AND GROUP D STREPTOCOCCUS ISOLATES FROM THE LAKE OCONEE WATERSHED, Michael W Reeves, Georgia Perimeter College, Lawrenceville, GA 30043. Enterococci isolated from surface waters are considered an indicator of fecal contamination. Because they may show antibiotic resistance, they are also a public health problem. We examined isolates of Enterococci and related species from the Lake Oconee watershed for their frequency in the ...

...of bile-esculin-azide agar, and black colonies were selected for further study. All these isolates were catalase negative, gram positive cocci. Isolates that grew in 6.5% sodium chloride in tryptic soy broth were considered Enterococci. Species were determined by fermentation patterns in mannitol, arabinose, raffinose, and sorbitol phenol red broths. Isolates that did not grow in 6.5% salt were designated as unidentified Streptococcus group D...

...vancomycin, penicillin, ampicillin, gentamycin, erythromycin, chloramphenicol, and tetracycline was determined by the Kirby-Bauer method. Isolates from cow (2), horse (3) and human (3) feces, and an E. faecalis from Carolina Biological were included for comparison. Twenty water and seven animal isolates were identified as Enterococcus and were grouped into seven species (faecium, faecalis, durans, raffinosus, gallinarum, dispar, avium). Eleven water and one animal isolates were Streptococcus D. Four of all Enterococcus and two of all Streptococcus water isolates were resistant to vancomycin. None of the cow or horse isolates were resistant to vancomycin, but two of the three human isolates were resistant as was the E. faecalis from Carolina Biological. Most of the water, animal, and control Enterococcus isolates were resistant to gentamicin (23 of 27), whereas, only three of 12 Streptococcus were resistant. One Streptococcus water isolate was resistant to all seven antibiotics. Two of the human Enterococcus isolates showed intermediate and full resistance to all antibiotics. These results suggest that Enterococci from surface...

...and Jonathan K. Stiles 1), (1) Morehouse School of Medicine, Department of Microbiology, Biochemistry and Immunology, 720 Westview Drive SW Atlanta, GA 30310, (2) National Institute of Malaria Research (ICMR), Jabalpur...

...whether leptin signaling could regulate molecules involved in pro-angiogenic and inflammatory events in E2-responsive and

irresponsive mouse and human BC xenografts in mice; 2) determine if the inhibition of...

...increases the levels of pro-angiogenic/inflammatory factors that positively affect the growth of estradiol responsive and non-responsive mammary tumors. Methods: mouse 4T1 and human MCF-7(ER+) and MDA-MB231 (ER-) cells...

...of VEGF, VEGFR2 and IL-1Rtl were determined in MT Lysates by Western blot. Immunohistochemical analyses of angiogenic related antigens: PECAM or CD31 and CD68 in MT were carried out. Results: Leptin signaling had a...

...intake between treatments was found. Conclusions: These results suggest that leptin signaling either in MT responsive or non-responsive to E2 impact on angiogenesis/inflammatory-related molecules which in turn positively contribute to the...

...Atlanta, GA 30310 and (3) Clark Atlanta Univ, Atlanta, GA 30312. Uptake of antibody-bound antigens by Fc receptor (FcR)-bearing antigen presenting cells (e.g., dendritic cells, DC) is effective for including a robust immune response against Chlamydia. However, FcR-based vaccine delivery using intact antibody-antigen immune complexes could have pathologic effects in clinical application in humans. We tested the hypothesis that...

...of Fc of IgG and select chlamydial proteins (rFc-OMPs) will target DCs at these mucosal sites for induction of protective immunity against genital Chlamydia infection. Fc-fusion protein of chlamydial MOMP (Fc-MOMP) was generated and used in DC binding studies in vitro, as well as immunogenicity and protection studies in vivo following immunizations. Results revealed that Fc-MOMP was internalized rapidly (within minutes) into pulsed wild-type DC...

...Intranasal or intravaginal administration of Fc-MOMP fusion proteins induced a significantly higher level of mucosal and systemic Th1 response against C. trachomatis serovar D and MoPn (P> 0.002). These results would suggest that these fusion proteins are capable of inducing long-term protective immunity against C. trachomatis.

DIFFERENTIAL EXPRESSION OF KERATINOCYTE TRANSGLUTAMINASE (TGASE1) PROTEIN IN RAT REPRODUCTIVE TISSUE IN RESPONSE TO ESTROGEN **, Hillary M. Jarrett * and W.T. Schroeder, Wesleyan College, Macon, GA 31210. Keratinocyte...

...epidermis, little is known about its expression pattern in other differentiating epithelia including the hormone-responsive tissues uterus and vagina. Preliminary studies in our laboratory have demonstrated that in rats, TGase 1 mRNA expression is induced in vaginal, but not uterine epithelia in response to estrogen. The current project will examine the expression of TGase1 protein in rat uterus...

...1, 3, 6, 12 and 18 hours after administration of exogenous estrogen in ovariectomized rats. Immuno-histochemical analysis will be performed utilizing a mouse anti-human monoclonal anti-TGase1 antibody that...

...only aid in the elucidation of the molecular mechanisms involved in the differentiation of estrogen-responsive epithelia, but might also provide evidence for the function of this novel protein in these...

...complications. Drugs used to treat HAT are toxic, and parasite resistance is common due to antigenic variation and an impervious membrane. Effective drugs and vaccines that target cation homeostasis in parasites by impeding proliferation and development...

...to assess the expression and localization of the ((Ca.sup.2+)) channel in the vulnerable flagellar pocket of parasites. The results indicated that TBCC1 is highly immunogenic and formed the basis of our hypothesis that vaccinating against TBCC1 will target (Ca.sup...

...challenged with T. brucei to assess parasitemia and survival. TBCC1-KLH induced a pro-inflammatory response common to that observed during HAT. This rapid identification and characterization of antigenic targets in trypanosomes may be a novel approach to assessing drug targets in T. brucei...

...We hypothesize that estrogen promotes Chlamydia infection and its complications by altering the expression of immune modulating cytokines and the production of arachidonic acid metabolites. In this study we used epithelial cells invitro to investigate the effects of estrogen on cytokine expression, prostaglandins production and other immune regulators during Chlamydia infection. The results showed reduced expression of IL-1, IFN-gamma, TNF...

...plays an integral role in several aspects of cell function including cell cycle regulation, cell motility, and especially regulation of the cytoskeleton. The expression of RhoA is ubiquitous, but its regulation ...

...sections of the vagina will be obtained. The expression of RhoA will be determined through immunohistochemistry and the slides will be analyzed using a Zeiss Axioplan II research microscope.

EFFECT OF...

...skin development, only preliminary studies have been carried out to investigate TGase1 expression in hormone-response epithelia such as vaginal tissue. Recent experiments in our laboratory have demonstrated that TGase1 is...

...sections of vaginal tissue will then be analyzed for the presence of TGase1 protein by immunohistochemistry utilizing a TGase1 monoclonal antibody. This study may provide valuable insight into the mechanism by...

...potential carrier and targeting vehicles for chlamydial DNA vaccines. Plasmid pVEN-3 encoding major outer membrane polymorphic proteins (OMPs) and FlaB from Vibrio vulnificus was constructed by sequentially inserting chlamydial PmpD and omp1 sequences as well as the FlaB...

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03432586 SUPPLIER NUMBER: 169758173 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Acute Infectious Diarrhea.
Emergency Medicine Reports, NA
Oct 1,
2007

PUBLICATION FORMAT: Newsletter ISSN: 0746-2506 LANGUAGE: English
RECORD TYPE: Fulltext TARGET AUDIENCE: Professional
WORD COUNT: 7108 LINE COUNT: 00608

... the patient with diarrhea is rote: fluids until the patient is rehydrated, possibly an anti-motility agent, and patience. Generally the patient feels better and is discharged a few hours later...

... There are 4 major types of diarrhea based on pathophysiology: secretory, inflammatory, osmotic, and abnormal motility. Most acute infections fall under the inflammatory or secretory mechanisms. (See Table 1.)

Table 1...

... is commonly referred to as dysentery, which classically manifests as loose stools with blood and mucous. Fecal leukocytes and erythrocytes are often present and can be detected for diagnostic purposes.

In...

... degree but the stools are mostly non-bloody and do not contain large amounts of mucous. Electrolyte disturbances may be severe resulting in weakness, paresthesias, cardiac conduction abnormalities, and even cardiovascular...

... among others.

A thorough history of stool patterns including frequency, consistency, presence of blood or mucous, or foul odor are important. Patients with infectious diarrhea may have a variety of other...

... physical examination involved in the assessment of volume status are jugular venous pressure, skin turgor, mucosal membranes, and capillary refill. A careful abdominal exam is crucial to detect the presence of...

... invasiveness of infection. Although the degree of elevation may not help reveal which organism is responsible for infection, it may suggest a more invasive illness. The band count has traditionally been...

... patient with significant abdominal pain, possible acute flare of inflammatory bowel disease, recent antibiotic usage, immunosuppressed patients, employees in the food handling industry, day care workers, travel to an endemic area...

... the testing your laboratory routinely performs. Specific requests may need to be made if *Yersinia*, *Vibrio*, or *E. coli* strains are suspected. It is optimal practice to indicate sought-after pathogens...

... 6. High Risk Patients *Elderly

*Neonates

*Patients with diabetes

*Patients with liver cirrhosis

*HIV patients

*Immunocompromised patients (chemotherapy, transplants, immunotherapy)

*Connective tissue disease

*Cancer patients

*Patients with cardiac valvular disease

*Patients with vascular grafts

*Patients...

... which has been associated with a rising incidence of antibiotic resistance to *Campylobacter* that is isolated from a large percentage of chickens and beef.¹⁷ The highest rates of antibiotic resistance...

... *Campylobacter* resistance to quinolones (as high as 85% in Thailand, travelers to this country may respond better to macrolides. Azithromycin can be dosed in a 3-day course or single-dose...

... uremic syndrome (*E. coli* 0157:H7) have all been observed in the setting of anti-motility usage. Fulminant amoebic colitis has even been observed with loperamide usage.²⁴ Anti-diarrheal drugs can be divided into 2 major groups: anti-motility agents and bulk forming/toxin binders. Opium products and loperamide (Imodium) impair peristalsis, thus very effectively reducing the number of stools. In patients with toxic and/or

invasive infections, anti-motility agents may increase the risk of worsening infection, toxic megacolon, and sepsis. These drugs are...

...social support, mental impairment, and those failing outpatient therapy. Also, patients demonstrating systemic toxicity or immunosuppression due to chemotherapy, autoimmune disease, or organ transplants should be considered for admission to the...

...when traveling such as those on acid reduction therapy (proton pump inhibitors, H₂ blockers), and immunosuppressed patients. In contrast to developed countries where viral illness predominates, traveler's diarrhea obtained in...

...common pathogens close behind such as: *Campylobacter*, *Shigella*, other *E. coli* species, *Salmonella*, *Aeromonas*, and *Vibrio*. Parasitic infections are not uncommon and include *Giardia lamblia*, *Entamoeba histolytica*, *Cyclospora*, and *Cryptosporidium*. *Enteropathogenic*...

...and Prevention (CDC) does not recommend prophylactic antibiotics. Despite this, it may be considered for immunosuppressed patients or other high-risk patients traveling to high-risk destinations. (See Table 11.) If...

...provide reliable travelers with means for empiric self-treatment, which can significantly reduce morbidity.³¹

Immunosuppressed Patients. Organ Transplants. In the United States there are up to 27,000 organs transplanted...

...can result in significant morbidity and mortality.³⁷ The differential diagnosis includes infection, medication effect (immunosuppressive agents, antibiotics, laxatives), and the surgical procedure itself. Bone marrow transplant patients may develop graft very difficult to eradicate and may require reduction of immunosuppression. The nematode *Strongyloides stercoralis* has been shown to re-activate in the post-transplant patient...

...months if the transplanted organ takes well, normal community-acquired organisms predominate. Bacteria most commonly isolated from transplant patients with diarrhea include: *Clostridium difficile*, *Yersinia enterocolitica*, *Campylobacter jejuni*, *Salmonella*, and *Listeria*...

...are again found in high incidence during times of rejection and other periods of aggressive immunosuppression. CMV infection is the most common viral infection causing clinical symptoms after transplantation. The CMV...

...Intestinal transplants are associated with the highest risk of latent virus reactivation. Other viruses commonly isolated from stool of post-transplant patients include adenovirus, calicivirus, and herpes virus.³⁹

Transplant patients...

...that the emergency physician communicate directly with the transplant service that manages the patient. Anti-motility agents should be used with great caution and are best avoided.

HIV Infected and AIDS...

...as well.

The clinical picture varies depending on many factors such as sexual habits and immune status. Patients who are HIV positive but who have low viral loads and higher CD4...

...the same community-acquired infections as the rest of the population. However, once the cellular immunity drops (CD4 < 100), a number of opportunistic pathogens enter the differential diagnosis. Opportunistic

pathogens such...

...infect normal hosts but usually cause self-limited disease. In HIV-infected patients with lower immunity, the infection persists and becomes a chronic debilitating illness.

In some cases the etiology of...

...and mild disease, many will have conditions that warrant use of empiric antibiotics and anti-motility agents. Judicious use of antibiotics limits the spread of resistant bacteria and has been shown...

...the ED can be managed and sent home; however, a low threshold for admission of immunosuppressed patients is important.

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17/3, K/47 (Item 3 from file: 149)
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Probiotics in health maintenance and disease prevention. (Probiotics).

Drisko, Jeanne A.; Giles, Cheryl K.; Bischoff, Bette J.

Alternative Medicine Review, 8, 2, 143(13)

May,

2003

PUBLICATION FORMAT: Magazine/Journal ISSN: 1089-5159 LANGUAGE: English

RECORD TYPE: Fulltext TARGET AUDIENCE: Academic; Professional

WORD COUNT: 6342 LINE COUNT: 00667

... providing basic nutritional value. They cooperatively maintain a delicate balance between the gastrointestinal tract and immune system. When this balance is disrupted, disease and inflammation result. Inflammation and over stimulation of the immune system by pathogenic bacteria are competitively inhibited by mucosal adherence of normal beneficial microflora. A healthy gastrointestinal tract with adequate mucus production and appropriate...

... infant diarrhea. (2)

Interest continues today as recent technological advances have enabled microorganisms to be isolated and colonized to determine their specific therapeutic properties. (3,4) Studies show these microflora are...

... 15)

In 1994, the World Health Organization deemed probiotics to be the next-most important immune defense system when commonly prescribed antibiotics are rendered useless by antibiotic resistance. (5) The use...

... used by health care practitioners in the not-too-distant future.

Colonization

The protective and immune barrier of the human gastrointestinal (GI) tract is diverse. It includes the epithelial layer, the mucous layer, the mechanics of peristalsis and desquamation, and actions of secretory IgA, all of which...

... The upper GI tract has relatively fewer bacteria secondary to saliva production and increased intestinal motility, which effectively move bacteria along the intestine and prevent large numbers from adhering to mucosal surfaces. In addition, gastric acid suppresses growth in the stomach. The relatively sparse flora of...

... beneficial characteristics.

Overgrowth of one bacterial species or imbalances in microflora resulting from a disturbed mucosal layer can alter digestive function, intestinal products, and/or immunological function. (16) In addition, a defective epithelial layer can allow bacteria to gain entry into the human host. This breach can arouse an inflammatory response in the host that has the potential to further alter normal function.

Function of the...

... foods.

Probiotics modulate not only the endogenous flora of the GI tract, but also the immune system (10,15,16,21) Lactobacilli augment both cellular and humoral immunity. (22) Lactic acid-producing bacteria stimulate various aspects of the immune system, including phagocytic function of macrophages, natural killer cells, monocytes, and neutrophils.

Following a rotavirus vaccination, Lactobacillus GG induce IgM-secreting cells and improve IgA seroconversion, which enhances immunoglobulin response to vaccines. (16) In addition, IgA response to rotavirus is enhanced by administration of Lactobacillus GG. (17) These reports confirm the positive effects of probiotics on innate and acquired immune enhancement, most likely resulting from an ability to bind to gut epithelium. After binding, antibody...

... been termed bacterial-epithelial cross-talk. (16) In another study, Lactobacillus GG enhanced the antibody response in adults receiving a typhoid vaccination. (22)

Another example of a probiotic enhancing the immune response can be seen in the activation of the reticuloendothelial system and complement cascade by *Saccharomyces boulardii*. (17) Clearly, interaction of commensal gastrointestinal flora with the gut-associated immune system is an important key in maintaining normal immune function.

The Effect of Probiotics on Pathogenic Bacteria

Probiotics reduce plasma levels of bacterial endotoxin...

... of bacteria may occur as a result of the ability of probiotics to tighten the mucosal barrier. (16) Although very little is known about specific molecular mechanisms by which indigenous flora...

... by fecal tumor necrosis factor- α is decreased by Lactobacillus GG

Lactobacillus GG also increases mucosal regeneration and reduces fecal urease production, a correlate of inflammation associated with chronic arthritis. (17...

...and colonizing gut mucosa. Probiotics disallow colonization by disease-provoking bacteria through competition for nutrients, immune system up-regulation, production of antitoxins, (24) and up-regulation of intestinal mucin genes. (14) Increased mucous production prevents adherence and colonization by competing microflora, thereby preventing imbalances.

Probiotics lower colon luminal...

...competitively inhibits colonization of the mucosa by pathogenic bacteria and reduces over-stimulation of the immune system. A healthy colon with adequate mucus production and appropriate bacterial colonization prevents the adherence...

...including the joints, lungs, and skin. Indirect effects most likely result from an impact on immunity, via changes in inflammatory mediators such as cytokines. Modulation of inflammatory responses may be related to regulating or modulating the immune system both locally in the GI tract and systemically.

It is speculated that inflammation associated...

...randomly allocated to receive Lactobacillus GG or bovine colostrum for a two-week period. (26) Immunological and nonimmunological gut defenses were investigated in blood and feces. The authors concluded that gut...
...disturbed in chronic juvenile arthritis and suggested orally administered Lactobacillus GG has potential to reinforce mucosal barrier mechanisms in this disorder. When inflamed, the gastrointestinal tract becomes permeable and serves as...

...GI tract and extra-inflammatory disorders such as arthritis. Modulation or down-regulation of the immune system and subsequent reduction in GI permeability can result from consuming probiotics. (16,17)

Allergies...

...colonize the sterile GI tract may establish a permanent niche and have lasting impact on immune regulation and subsequent development of atopic disorders. In infants with already established eczema, significant improvements...

...treating food allergy. (15)

Associated studies have confirmed the positive effect probiotics have on the immune system, both in animal and human trials. (28-30) In mildly hypersensitive patients, probiotics down-regulated a milk-induced inflammatory response. (28) This was found to be secondary to prevention of increased receptor expression in monocytes...

...cytokines, such as interleukin-10, in atopic children. (30) This is seen both as an immunostimulatory effect in healthy subjects and as a down-regulation effect of immunoinflammatory responses in hypersensitive patients.

Similarly, in animal models, it has been demonstrated that probiotics reinforce mucosal degradation of antigens by enhancing breakdown of macromolecules. (29)

HI V/Compromised Immunity

Further evidence of a positive effect of probiotics on the immune system can be seen in a study examining Lactobacillus plantarum 299v supplementation in children congenitally...

...in height and weight in follow-up visits. The authors noted a marked augmentation in immune response demonstrated by a change from complete anergy to normal immune response in one patient. These

data suggest *L. plantarum* 299v can be given safely to immunocompromised hosts, may indeed have a positive effect on immune response, and has the potential to improve growth and development.

Further confirmation of enhanced immunity and increased resistance to infection has been demonstrated in both animals and humans. In the immunodeficient euthymic mouse model, *Lactobacillus* sp. and *Bifidobacteria* decreased disseminated systemic *Candida albicans*. (32) In addition...

...respiratory disease is related to up-regulation of mucin cells along with the enhanced antibody response. Expanding the use of probiotics in immune-compromised patients appears promising.

Hyperlipidemia

Another unexpected benefit of probiotics is serum lipid reduction. Several...

...to benefit viral diarrhea, possibly by increasing secretory IgA and decreasing viral shedding, suggesting an immunological mechanism. Although numerous strains of probiotics, doses, and different populations in these studies make generalizations...

...effects of probiotics in the GI tract are well documented and include up-regulation of immunoglobulins such as IgA, down-regulation of inflammatory cytokines, and enhancement of gut barrier function. Exciting...

...indirect, systemic effects of probiotics for a widely divergent set of disorders, including atopic disease, immune compromise, and vaginal infections.

Table 1a. Activity of Specific Probiotics

Microflora	Associated Actions	Reference
Bacteroides...		
... gastroenteritis		
<i>Escherichia faecium</i> SF 68	b. No benefit in diarrhea due to <i>Vibrio cholerae</i> and <i>Escherichia coli</i>	b. (2, 55)
<i>Escherichia coli</i> nonpathogenic strain	As effective as mesalazine in maintaining... of non-pathogenic bacteria to eliminate pathogens and as an adjunct to antibiotics	(6)
d. (14, 40, 56)	d. Improved mucosal immune function, mucin secretion, and prevention of disease	
<i>Lactobacillus</i>	a. Significant decrease...	
...d. (51)	and pain in irritable bowel syndrome in controlled trial	
e. (31)	e. Positive effect on immunity in HIV+ children	
<i>Lactobacillus reuteri</i>	a. Shortened the duration of acute...	a. (24)

...acetic

acid-induced colitis in rats
d. Shortened acute diarrhea d. (37)

Lactobacillus
rhamnosus (HN001) Enhanced cellular immunity in (58)
healthy adults in controlled trial

Lactobacillus
salivarius... Suppressed and eradicated (25)

...time of i. (11)

Crohn's disease
j. Increased IgA anti-toxin A responses in pretreated mice j. (59)

Saccharomyces
cerevisiae (a yeast) Enhanced digestion of sucrose (24)
load was shown...

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Jeanne Drisko, MD - University of Kansas Medical Center, School of
Medicine...

... DESCRIPTORS: Immune system

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Characterization of flagella produced by clinical strains of
Stenotrophomonas maltophilia.

de Oliveira-Garcia, Doroti; Dall'Agnol, Monique; Rosales, Monica; Azzuz,
Ana C.G.S.; Martinez, Marina B.; Giron, Jorge A.
Emerging Infectious Diseases, 8, 9, 918(6)

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2002

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Characterization of flagella produced by clinical strains of
Stenotrophomonas maltophilia.

TEXT:

...The adhesive surface factors involved in adherence of these
bacteria are largely unknown, and their flagella have not yet been
characterized biochemically and antigenically. We purified and
characterized the flagella produced by *S. maltophilia* clinical
strains. The flagella filaments are composed of a 38-kDa subunit,
S(M sub. FliC), and analysis of its N-terminal amino acid sequence showed
considerable sequence identity to the flagellins of *Serratia*
marcescens (78.6%), *Escherichia coli*, *Proteus mirabilis*, *Shigella sonnei*
(71.4%), and *Pseudomonas aeruginosa* (57.2%). Ultrastructural analysis by
scanning electron microscopy of bacteria adhering to plastic showed
flagellalike structures within the bacterial clusters, suggesting
that flagella are produced as the bacteria spread on the abiotic
surface.

... mastoiditis, meningitis, post-operative wounds, abscesses, urinary
tract infections, and pneumonia (6,9-11). The isolation rates of *S.*
maltophilia from the respiratory tracts of patients with cystic fibrosis
and from...

...medical implants and catheters suggests the development of a biofilm
that protects bacteria from natural immune defenses or from the
action of antimicrobial compounds. Biofilms are made up of a community...

...pathogenesis of *S. maltophilia*-associated infections (5,17).

While for some bacteria the expression of flagella does not
clearly relate to pathogenesis, for a variety of bacterial pathogens, such
as *Proteus mirabilis*, *Salmonella enterica*, and *Yersinia enterocolitica*, the
participation of flagella in adherence and invasion has been
documented (18-20). In addition, the role of flagella in the
formation and development of biofilm has recently been investigated in
Pseudomonas, *Escherichia coli*, and *Vibrio cholerae* (21-24). Jucker et
al. reported that nonspecific adhesion and biofilm formation by *S.*...

...biofilm formation by *S. maltophilia* has been documented, no surface
molecule or structure such as flagella or fimbrial adhesins

implicated in adherence to plastic or eukaryotic cells has yet been characterized...

...detail (4, 23, 25). To characterize the surface appendages produced by *S. maltophilia*, we purified flagella from a clinical isolate and used specific anti-flagella antibodies to test for the presence of these structures in a collection of clinical isolates. In addition, we studied the kinetics of adhesion and performed ultrastructural studies by scanning electron microscopy of bacteria adhering to plastic. These studies showed structures resembling flagella, suggesting that these structures may be important for the adherence phenomenon.

Materials and Methods

Bacterial Strains and Growth Conditions

We included in this study 46 clinical isolates of *S. maltophilia* obtained from patients admitted to four institutions in the City of São Paulo...

...Laboratório Fleury, and Hospital Universitário (Universidade de São Paulo). Most of these clinical strains were isolated from respiratory tract secretions obtained from intubated patients with pneumonia; in most cases, *S. maltophilia*...

...*S. maltophilia* ATCC 13637 is a reference strain also used in our studies. For expression of flagella, bacteria were grown on trypticase soy agar supplemented with 5% defibrinated sheep blood (Oxoid, Basingstoke...

...degrees)C for 48 h.

Transmission and Scanning Electron Microscopy

We analyzed the presence of flagella by negative staining and transmission electron microscopy. Bacteria were negatively stained for 2 min with...

...27). The specimens were examined in a high-resolution Hitachi (Tokyo, Japan) scanning electron microscope.

Isolation of Flagella

For purification of flagella, clinical isolate *S. maltophilia* SMDP92 was grown on 100 blood agar plates and harvested in 100 mL of 10 mM phosphate-buffered saline (PBS), pH 7.4. The flagella were detached from the bacterial cells by vigorous shaking, and the supernatant containing the sheared flagella was separated by centrifugation at 8,000 x g for 30 min (26). The flagella were separated from outer membrane proteins and other contaminants by precipitation with 60% saturation of ammonium sulfate for 18 h at 4(degrees)C. After centrifugation at 12,000 x g for 30 min, the flagella were resuspended in PBS, and insoluble contaminants were removed by a similar centrifugation step. The...

...N-Terminal Amino Acid Sequence Analysis

For SDS-PAGE and Western blot, whole bacterial cell extracts or flagella extracts were denatured and separated in 14% polyacrylamide gels and transferred onto polyvinylidene difluoride (PVDF) membranes (Millipore Corp., Bedford, MA) (27). The blot was reacted with anti-flagella antibodies and secondary anti-rabbit immunoglobulin (IgG) conjugated to horseradish peroxidase (Sigma Chemical Co., St. Louis, MO). The reaction was...

...hydrogen peroxide (Sigma). A 38-kDa protein band of interest was excised from the PVDF membrane and subjected to N-terminal amino acid sequence analysis at the Instituto de Química, Universidade de São Paulo. Sequence analysis and homology studies with published flagellin sequences were performed by using the EMBL/Gen-Bank (BLAST of National Center for Biotechnology Information, Bethesda, MD) software.

Anti-Flagella Antibodies

Antibodies against *S. maltophilia* flagella were raised by immunization of New Zealand rabbits with the flagellin protein (38-kDa band) excised from Coomassie-blue stained gels. The bands were dried and homogenized in complete Freund's adjuvant for the first dose and in incomplete adjuvant for the subsequent three weekly doses. Blood was collected at each immunization, and the presence of antibodies was monitored by Western blot. Antibodies against flagella obtained from *E. coli* E2348/69 (O127:H6), *Shigella flexneri*, and *S. sonnei* were available...

...violet staining by reading optical density at 620 nm (22).

Results

Characteristics of *S. maltophilia* Flagella

Growth of the bacteria in blood agar plates at 37(degrees)C resulted in a condition favorable for flagella expression. Analysis by electron microscopy demonstrated that while some organisms had only one polar flagellum others had several flagellar structures (Figure 1). The flagella filaments, ~45 nm in width and >15 (microm) long, are indistinguishable from other unsheathed flagella such as those produced by *E. coli* or *Salmonella* (30,31). After purification of flagella by repeated ammonium sulfate precipitations, a peptide band that migrated with an apparent mass of...

...PAGE Coomassie blue-stained gels (Figure 2A). Antibodies obtained against the excised 38-kDa putative flagellin reacted with this polypeptide in immunoblots (Figure 2B). The flagella preparation was rich in flagellar filaments as determined by negative staining and electron microscopy (Figure 2C).

(FIGURE 1, 2A-2C OMITTED)

Sequence and Antigenic Relatedness of *S. maltophilia* Flagellin to Other Flagellins

These results suggested that the 38 kDa is the major structural component (FliC) of the flagella filament. Thus, this polypeptide was subjected to N-terminal amino acid sequence analysis, which showed that the 38-kDa protein is in fact the flagellin structural protein, which is highly homologous to other bacterial flagellins. The *S. maltophilia* FliC protein, S(M sub. FliC), showed considerable identity in its first 14 amino acid residues to the flagellins of *E. coli*, *P. mirabilis*, and *Shigella sonnei* (71.4%, and 78.6% identity to the flagellin of *Serratia marcescens*. The flagella produced by *P. aeruginosa* showed the lowest level of identity (57.2% with S(M..

...interested in determining if S(M sub. FliC) shared any common epitopes with the other flagellins. This antigenic cross-reactivity was investigated by using several antisera against flagellins of *E. coli*, *Shigella*, *P. aeruginosa*, and *P. mirabilis*. Among these, only antibodies against flagella of *P. mirabilis* and anti-FlaA and anti-FlaB of *P. aeruginosa* reacted in immunoblots with the *S. maltophilia* flagellins, although to differing levels of reaction (Figure 4). Anti-S(M sub. FliC) antibodies reacted...

...proteins produced by both *S. maltophilia* strains tested (Figure 4).

(FIGURE 4 OMITTED)

Expression of Flagella by Clinical *S. maltophilia* Isolates

We investigated S(M sub. FliC) in fresh isolates of *S. maltophilia*. Forty-six *S. maltophilia* clinical isolates and *S. maltophilia* ATCC 13637 were studied by immunoblot, with antibodies against S(M sub. FliC) of SMDP92. A preparation of purified flagella was used in all reactions as a positive control. All the isolates tested produced the ~38-kDa flagellin that reacted with antibodies against S(M sub. FliC) (Figure 5). However, the molecular mass of the flagellin produced by some of the isolates differed slightly,

and doublet bands were seen in some cases. We also performed negative staining and transmission electron microscopy in these isolates to confirm expression of flagella (Figure 1). These results show that the production of the 38-kDa flagellin and flagella is a common feature of reference and fresh clinical isolates of *S. maltophilia*.

(FIGURE 5 OMITTED)

Kinetics of Adherence to Plastic

As early as 30...

... Furthermore, analysis by scanning electron microscopy of SMDP92 adhering to the plastic showed structures resembling flagella on the adhering bacteria (Figure 8). These filaments were seen protruding from the bacteria, apparently...

... some yet-undefined role in adherence to plastic. High-power magnification of adhering bacteria showed flagella-like filaments (40-50 μ m in width) and thin fibrillar structures (5-7 (μ m) m...

... Although adherence to abiotic surfaces is a property of both environmental and clinical *S. maltophilia* isolates, little information has been available to elucidate the nature of the surface factors involved in this phenomenon. Flagella have been associated with biofilm formation in other bacteria (18,20-22), where they can...

... promote spread of the bacteria throughout the surface (20). In 1983, Montie and Stover purified flagella from several pseudomonads, including *P. maltophilia* strain B69 (now referred to as *Stenotrophomonas maltophilia*) (32), and found that B69 produced a flagellin and had a molecular mass of 33 kDa. They found that antisera against flagella of *P. aeruginosa* and *P. cepacia* did not agglutinate *P. maltophilia* bacteria, suggesting absence of antigenic cross-reactivity between these flagella. No further biochemical characterization of *S. maltophilia* flagella has been done. In this paper, we describe the purification and characterization of *S. maltophilia* flagella; we raised specific antibodies to study the production of flagella in a collection of clinical isolates. The flagella produced by *S. maltophilia* strains are composed of a 38-kDa flagellin subunit, S(M sub. FliC). The identity of this polypeptide was demonstrated by N-terminal amino acid sequencing analysis and by immunodetection assays using antibodies raised against the purified flagellin. The discrepancy between the molecular mass of S(M sub. FliC) and the flagellin (33 kDa) found previously in B69 could be attributed to differences in the electrophoresis conditions...

... to differences in the strains per se. Nevertheless, we did find molecular mass differences among flagellins produced by clinical isolates.

The comparison between the N-terminal amino acid sequence obtained from this 38-kDa polypeptide (14 residues) showed that S(M sub. FliC) shares important identity with several known flagellins: 71.4% identity to FliC of *E. coli*, *P. mirabilis*, and *S. sonnei*, and 78...

... *maltophilia* and *P. aeruginosa* was 57.2% which is lower than that observed with enterobacterial flagellins. In spite of the similarity between S(M sub. FliC) and these other flagellins, they are antigenically distinct since only antibodies against *P. mirabilis* flagellin, FlaA and FlaB of *P. aeruginosa* reacted with S(M sub. FliC) in immunoblots. We do not yet know the biological relevance of this finding, but based on these data, we can speculate that the flagellin gene of *S. maltophilia* was probably modified through the evolution of the organism, yielding a FliC protein with different antigenic properties but similar biological functions.

Visualizaion by high-resolution scanning electron microscopy of bacterial monolayers adhering to plastic showed flagellalike

filaments connecting bacteria to each other and to the inert surface, suggesting that these structures are involved in adherence, along with other thin fibers, resembling pili. In *P. aeruginosa*, the flagella appear to act as structures that promote the initial interaction of the bacteria with the abiotic surface during early stages of biofilm development, as demonstrated with flagella mutants that are unable to produce biofilm (18). While the definitive role for flagella in adherence by *S. maltophilia* needs to be supported by the use of defined motility-lacking and flagella-deficient constructs, the presence of flagella at late stages of adherence on bacteria adhering to the plastic suggests that flagella may play some role in this event.

Much remains to be understood concerning the virulence...

...bacteria to plastic may be important for the establishment of opportunistic infections in hospitalized and immunocompromised patients. Elucidating the surface factors that allow *S. maltophilia* to adhere to inert surfaces will...

...N-terminal amino acid sequencing and Harry T. Mobley and Arora Shi wani for antisera against flagella of *Proteus mirabilis* and *Pseudomonas aeruginosa*, respectively. J. A. Gron thanks James B. Kaper for...

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Address for correspondence: Jorge...

...main interests are the virulence factors and molecular epidemiology of nonglucose-fermenting Gram-negative bacilli isolated from the respiratory tract of patients with or without cystic fibrosis.

Doroti de Oliveira-Garcia...

DESCRIPTORS: Flagella (Microbiology...

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Bi terrorism Update-- Current Guidelines and Recommendations for Prevention and Treatment of Biological Threats: Part I.

Dietrich, Ann
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2001

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TEXT:

...war or terrorism against citizens of the United States. Although a vast array of first responders, including elements of the military, police, and fire departments, emergency medicine services, and hazardous materials units have been preparing to respond to such emergencies, relatively few physicians have been involved in comprehensive efforts to defend against...

... attack however, primary care physicians, emergency medicine specialists, and departments of pharmacy-- which would be responsible for maintaining adequate inventories of antidotes, vaccines, and antimicrobials required for such a contingency-- would play a front-line role in the detection, evaluation, and response to this threat. Formal educational curricula informing clinicians about the likely agents of bioterrorism are...

...devoted to antimicrobial preparedness, recent developments concerning anthrax management, and current programs under development for responding to bioterrorist activities.

-- The Editor
Initial Assessment and Treatment
In the event of a covert...

...0.1% bleach may be appropriate.

Dagnosis. Questions about food and water sources, vector exposure, immunization history, travel history, occupation, and illnesses in other family members may offer clues to the...

...care centers, specimens should be obtained and forwarded through public health channels or reference laboratories.

Nasal swabs, blood cultures, serum, sputum cultures, blood and urine for toxin analysis, and throat swabs should be considered. If the patient has diarrhea, stool specimens should be obtained. Nasal swabs may be used for both culture and polymerase chain reaction (PCR) analysis for common...

...count reaches 10 million/mL, antibiotic therapy is futile. (6)

Subsequent production of exotoxin is responsible for extensive local edema and tissue necrosis. The bacillus secretes three toxins: edema factor, lethal factor, and protective antigen. The edema factor increases intracellular cyclic adenosine monophosphate and causes massive edema. The lethal factor causes the release of tumor necrosis factor and interleukin-1, resulting in shock. Protective antigen acts as a membrane channel and transports the other two factors into the cellular cytoplasm.

More than 95% of...

...lymph nodes or spleen will be positive. Anthrax toxin may be detected in blood by immunoassay.

Some previous cases were diagnosed on autopsy by a pathologist who noted a peculiar "cardinal..."

...the United States and United Kingdom (11) Both are based on the partially purified protective antigen of the B. anthracis adsorbed to an aluminum adjuvant. (12) The usual immunization series is six 0.5 mL doses over a span of 18 months. The military...

...against both cutaneous and inhalation anthrax for about six months after the primary series. These immunizations were given to many coalition troops during the Gulf War in anticipation of Saddam Hussein's employment of this agent. Since 1997, the Department of Defense required anthrax immunization for all active duty service personnel.

Although "minor" reactions to the vaccine are common (6% of immunized population), major reactions are uncommon. Obviously, the vaccine is contraindicated for those who are known...

...4, Recommendations for Post-Exposure Prophylaxis.)

A live anthrax vaccine is used in Russia to immunize both livestock and human beings. It is a spore vaccine with both STI-1 and strain 3 mixtures. The Russians feel that this vaccine is superior for stimulating cell-mediated immunity. (13) There would be considerable resistance to use of the Russian vaccine in Western countries...

...will adequately protect against an aerosol challenge. (14) New vaccines with a highly purified protective antigen or designer attenuated strains have been used in laboratories, but are not commercially available. (15...

...vaccine with the standard schedule (if it is available) if they have not been previously immunized. Those who have received fewer than three doses of vaccine prior to exposure should receive...

...be cremated if possible.

Brucellosis. Brucellosis is a zoonotic disease caused by a small, non-motile coccobacilli. The natural reservoir is domestic herbivores such as goats, sheep, cattle, and pigs. There...

...for safety and effectiveness. (19)

Cholera. Cholera is a well known diarrheal disease caused by Vibrio cholera, acquired in humans through ingestion of contaminated water. The organism causes a profound secretory...

...cause similar watery diarrhea. Bacteriologic diagnosis of cholera diarrhea has been well studied for decades. *Vibrio* species can be seen and identified readily with darkfield or phase contrast microscopes. Culture will...

...in Giemsa stained specimens. Appropriate specimens are lymph node aspirate, sputum, or cerebrospinal fluid (CSF). Immunofluorescent staining is available and helpful if readily accessible. *Y. pestis* can be readily cultured from...

...not protect against an aerosol exposure and subsequent pneumonic plague. The plague vaccine is a whole-cell, formalin-killed product. The usual dose is 0.5 mL given at weeks zero, one, and two. Current whole-cell plague vaccines stimulate immunity against the bubonic form but probably are not effective for the pneumonic form (20,21 ...

...not yet available, but are under development. (22)

This disease is readily contagious and strict isolation of the patients is essential. Both droplet and aerosol transmission is described in pneumonic plague. (23) Patients with pneumonic plague should be isolated to protect against droplet transmission. (24) This isolation includes the use of surgical masks when standing within one meter of the patient and...

...A form is prevalent in the United States.

Tularemia can infect humans through the skin, mucous membranes, gastrointestinal tract, and lungs. Humans can contract this disease naturally by handling an infected...the most common natural form of tularemia. It occurs through inoculation of the skin or mucous membranes with blood or tissue fluids from an infected animal or human. The indurated, non...

...and prophylaxis of both children and adults.

Prophylaxis. Human to human spread is unusual, and isolation is not required. Laboratory workers are at high risk of contagion, however. Laboratories should be...

...is delivered intradermally and provides protection to an aerosol challenge by the third week post-immunization. Protection is dependent on the inhaled dose of tularemia, and inhalation of massive quantities of...

...confirmed serologically, and other laboratory findings are unlikely to be helpful. It is difficult to isolate rickettsia, and Q fever is no exception. ELISA testing is available at reference laboratories.

Most...

...A leukocytosis may be present. Sputum examination often is not helpful.

It is difficult to isolate rickettsia and Q fever is no exception. ELISA testing is available at reference laboratories.

The...

...used in the patient unable to take the other recommended medications.

Prophylaxis. A formalin inactivated whole-cell vaccine is available as an investigational drug in the United States and has been used ...

...Q fever. (30) A Q fever vaccine is licensed in Australia. One dose will provide immunity for an aerosol challenge within three weeks. Protection lasts for at least five years.

Skin testing is required to prevent a severe local reaction in previously immune individuals. A live attenuated strain (M44) has been used in the former USSR. (31)

Q..

...occurred in a laboratory in 1978. (33) As a direct consequence, no one is being immunized against smallpox anymore, and the population immunity has fallen dramatically. Currently, vaccinia vaccination is used only for laboratory workers exposed to vaccinia...
...was considered an unlikely agent of biowarfare because there was a high level of population immunity to the virus, there is an effective vaccine, and the use of the vaccine can...

...A large proportion of the adult population and all of the pediatric population have no immunity. There is little available vaccine and no effective treatment. The expected case fatality rate is...

...patient develops a dusky erythema, followed by petechiae and flank hemorrhages into the skin and mucous membranes. Death occurs by the fifth or sixth day after the rash. (36) Pregnant women...

...that in-hospital infectivity is quite high. (In Germany, a smallpox patient with a cough, isolated in a single room infected persons on three floors of a hospital.) (37) This infectivity...

...rash often is sparse. This presentation also may be seen in those who have residual immunity from prior vaccination. In the partially immune patient, the rash is atypical and scant. The evolution of the lesions may be more...

...pustular lesion at the site of inoculation, with localized lymph node involvement. When administered to immunocompromised patients, vaccinia may become progressive. Generalized vaccinia occurs 6-9 days after inoculation. The patient...

...Clotting factors may be depressed and thrombocytopenia may be found. Diagnosis may be made with immunofluorescence, electron microscopy, or culture. Orthopox viruses are large, brick-shaped viruses with a single double...

...of prior vaccination status. Vaccination should be considered for any other persons who would be responsible for patient care during a suspected outbreak of smallpox and for the investigation and control...

...who have been vaccinated at some time in the past will usually have an accelerated immune response. Those who have been previously vaccinated may be somewhat safer in situations with close patient contact. Isolation of all contacts of exposed patients would be quite difficult. If the weaponized smallpox is...

...A fever of 101 (degrees) F (38 (degrees) C) or higher should be cause for isolation of the contact until clinical or laboratory diagnosis of the disease or other cause of...

...global eradication program showed that patients who had no rash did not transmit infection, so "isolation on fever" is a logical step. The malignant (flat) form of the rash and the...

...at Fort Detrick.

Smallpox vaccine is not without complications, since vaccinia can be lethal to immunosuppressed patients. Indeed, among 5.5 million vaccinations done during the 1961-1962 outbreaks of smallpox...

...more aggressive cancer chemotherapy, use of high dose steroids, and HIV infections, the number of immunosuppressed individuals has grown markedly since 1952. Each of these patients is at mortal risk from...

...is entirely supportive with volume replacement and symptomatic care. Patients with encephalitis may require anticonvulsants.

Isolation is not required, since this disease is not transmitted human to human. The patient should...

...has been tested but not licensed in humans. This vaccine is used to boost non-responders to TC-83.

There is no pre-exposure or post-exposure prophylaxis available. Interferons have...

...or dying animals

- * More severe disease than is usual for a specific pathogen
- * Failure to respond to standard therapy for a specific pathogen
- * Disease that is unusual for the geographic area...

...casualties

handbook. USAMRIID 2001; Fort Detrick, MD.

Table 2. Samples to Obtain from Representative Patients

- * Nasal swabs for culture and PCR (take several, if possible)
- * Blood cultures (take several, if possible...)

...contact precautions

8. ALERT THE AUTHORITIES

9. ASSIST IN EPIDEMIOLOGY

Ask questions about potential exposures, immunization history, travel history, occupation, food/water sources, vector exposures, activities over the preceding 3-5...

...Bacillus anthracis

CATEGORY	INITIAL THERAPY	DURATION
Adults (including pregnant women and immunocompromised persons)	Ciprofloxacin 500 mg po BID or Doxycycline 100 mg po BID	60 days
Children	Ciprofloxacin 10-15	60...

84, which has but not licensed for use in humans. C-84 is boost non-responders to TC-83.

Yellow fever The only licensed vaccine for any of the hemorrhagic fevers...

...Variola major has up to 10 million doses; 40 million more on order. Contraindicated for immunosuppressed individuals. Not recommended since 1980.

Staphylococcal enterotoxin B Animal work appears promising.

Tularemia Only given...

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Using Monoclonal Antibodies to Prevent Mucosal Transmission of Epidemic Infectious Diseases. (Statistical Data Included)

Zeitlin, Larry; Cone, Richard A.; Whaley, Kevin J.

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Using Monoclonal Antibodies to Prevent Mucosal Transmission of
Epidemic Infectious Diseases. (Statistical Data Included)

TEXT:

Passive immunization with antibodies has been shown to prevent a wide variety of diseases. Recent advances in monoclonal antibody technology are enabling the development of new methods for passive immunization of mucosal surfaces. Human monoclonal antibodies, produced rapidly, inexpensively, and in large quantities, may help prevent respiratory...

... public health perspective, prevention is especially important (5). In particular, direct application of MAb to mucosal surfaces blocks the entry of pathogens into the body.

We review here the evidence of...

... efficacy in preventing disease and recent advances that have facilitated the development of MAb for mucosal applications in humans. Finally, we consider the public health potential of topical delivery of MAb for preventing mucosal transmission of infections.

Immunologic Strategies for Preventing Mucosal
Transmission

Vaccines that stimulate systemic immunity can prevent systemic disease, but generally fail to prevent mucosal disease. Vaccines that stimulate active mucosal immunity have demonstrated good efficacy in animal models, but with few exceptions (polio and influenza vaccines...

... animals and humans are probably due to a failure of studies in animals to model immune evasion strategies of pathogens (6) that occur in humans. These strategies include rapid evolution of variable strains (7), pathogens that coat themselves with host antigens (8), and pathogens that are transmitted to a new host by hiding inside cells shed by the infected host (cell vectors) (9). Furthermore, most vaccines successful in stimulating mucosal immunity in animals contain irritating adjuvants or attenuated pathogens, which are generally considered unacceptable for use in humans; vaccines with human-safe adjuvants have not generated high concentrations of protective antibody in the mucosa. Current research is investigating improved immunogens, delivery vehicles, and adjuvants, as well as exploring the best inductive sites for generating a protective mucosal immune response at a specific mucosal surface (10).

In contrast to vaccines, passive immunizations can deliver protective levels of antibodies immediately and directly to the susceptible mucosal surface (Figure 1-top). Also, with passive mucosal immunization, it may be possible to defeat some key immune evasion strategies by using antibodies directed against host cell vectors, host antigens that coat the pathogen, or receptors used by pathogens to enter target cells (11). In...

... 12).

(Figure 1 ILLUSTRATION OMITTED)

Efficacy of Antibodies in Preventing Disease

The first use of immune serum for preventing disease by passive immunization was reported more than 100 years ago by von Behring and Kitasato (13). Subsequently,

Subsequently, systemic passive immunization with antibodies has been proven effective in preventing many diseases. By binding to a pathogen...

... diseases caused by all of these viruses.

Table 1: Examples of highly effective systemic passive immunization

Pat hogen	Spe- ci es(a)	Ant i - body(b)	Pr e- ven- tion (%)
Vi ruses			
Chi kungunya	mou	p	100...

... strains reported (from Ref. 60).

(d) NR = not reported

Although less studied than systemic passive immunization, the prophylactic use of mucosal antibodies predates the therapeutic use of immune sera. Antibodies delivered in mother's milk have been protecting the gastrointestinal tract of nursing... since the mammary gland first evolved approximately 50 million years ago. Most infections begin in mucosal surfaces (approximately 400 (m sup. 2) in an adult human); supplementing the antibody repertoire in a mucous secretion (Figure 1-top) thus offers an effective method for protecting a mucosal surface against pathogens to which the host has not been exposed or become immune. In addition to the protective mechanisms described above, antibodies delivered to mucosal surfaces can trap pathogens in the mucous gel, make them mucophilic, and prevent their diffusion and motility (Figure 1-bottom); as a result, pathogens trapped in mucus are shed from the body with the normal flow of mucous secretions or are digested if these secretions enter the digestive tract (61-63). Topical passive immunization of mucosa can block transmission of bacteria, viruses, fungi, and parasites that infect humans (Table 2).

Table 2: Examples of highly effective topical passive immunization of mucosa

Pat hogen	Spe- ci es(a)	Rout e(b)	Ant i - body(c)
Vi ruses			
Herpes simplex	mou...		
... Shigella flexneri	hum	o	p
Staphylococcus aureus	mou	n	p
Streptococcus mutans	hum	o	m
Vibrio cholerae	mou	o	m
Fungi			
Candida albicans	mou	v	p
Parasites			
Cryptosporidium parvum	mou	o...	

... 100% (75)			
Shigella flexneri	100%	(76)	
Staphylococcus aureus		(77)	
	3-4		
Streptococcus mutans	100%	(78)	
Vibrio cholerae	100%	(79)	
Fungi			
Candida albicans	>50(f)	(80)	
Parasites			
Cryptosporidium parvum	77(g)	(81...	

... hamster.

(b) Delivery route of pathogen and antibody: v=vaginal; r=rectal; o=oral; n=nasal.

(c) Antibody: m=monoclonal; p=polyclonal.

(d) (log. sub. 10) reduction in virus titer.

(e)...

... cf u.

(g) % reduction in number of parasites.

The predominant (and perhaps the most appropriate for mucosal delivery) antibody isotype on most human mucosal surfaces is secretory immunoglobulin A (SIgA); efficient methods for producing SIgA have been reported (82, 83). SIgA, a tetravalent...

...especially stable and well suited to function in the enzymatically hostile environment that prevails at mucosal surfaces (84). SIgA, the least phlogistic class of antibody (84), is the least likely to induce inflammatory responses that can make it easier for toxins and pathogens to breach the mucosal surface. Immune exclusion of antigens, enzymes, and toxins has been repeatedly demonstrated in vivo, and protection generally correlates with levels of SIgA antibodies in the relevant mucous secretions. Finally, the protective role of SIgA has been demonstrated in many systems (85).

Recent...

...pathogens lethal to humans can be generated. Alternatively, human MAbs can be generated by traditional immunization of commercially available mice that have been genetically engineered to contain human immunoglobulin loci in their germline (Figure 2) (90, 91).

(Figure 2 ILLUSTRATION OMITTED)

Dramatic enhancement of...

...often been evaluated for systemic applications, only recently have they been evaluated in humans for mucosal applications. This new interest in mucosal antibodies may be partially due to the increasing recognition of the importance of mucosal immunity. Only two clinical trials have evaluated topically delivered MAbs: intranasally delivered anti-RSV in infants...

...studies.

Safety concerns, such as peptide and glycosylation

Safety concerns, such as peptide and glycosylation

immunogenicity, are important when MAbs are delivered systemically but are likely to be of less concern...

...evolved to interact with the external environment. Indeed, antibodies delivered to the lumen of a mucosal surface have minimal interaction with circulating immune cells. Although proteins, and even antibodies, can be absorbed through mucosal surfaces (107, 108), generally only small quantities are absorbed (109, 110). The inability of SIgA to activate complement by the classic pathway is likely involved in maintaining the integrity of mucosal surfaces (63); therefore, SIgA may be preferable to IgG or IgM for many mucosal applications.

The FDA "Points to Consider" for characterization of antibodies produced in cell-culture and...

...personal care products, it is unlikely that any of these patterns are novel to human immune systems (112). In fact, in a recently completed clinical trial with repeated applications of plant...

...mutans, no safety problems were encountered, nor were there any detectable human anti-plant antibody responses (113).

Selection for resistant organisms by widespread and repeated use of antibiotics is a serious...

...are less likely to create resistant organisms when used in a preventive context at a mucosal surface against a pathogen that is not yet actively replicating. Even if a systemic infection...

...will not be replicating and evolving in the presence of the mAb applied to the mucosal surface. This is in marked contrast to the settings in

which antibiotics and antiviral drugs...

...concern, the tendency to select mAb-resistant organisms could be minimized by using cocktails of mucosal antibodies directed at multiple antigenic targets (2,114). Because new MAbs can be produced with a rapid turnaround time (discussed...

...could be countered by producing a new mAb directed toward the mutated epitope or another antigenic target of the resistant strain. Indeed, the flexibility of the antibody structure to create a virtually inexhaustible repertoire of antigen binding specificities suggests that immunoglobulins evolved in part as a means to cope rapidly with new pathogens.

Turnaround Time for...

... New mAb

Since human MAbs can be identified quickly by cloning variable regions from specific antigen-binding human lymphocytes (115) or panning combinatorial libraries (87), antibodies could be used as a...

...vaccines, antibiotics, and antiviral therapies usually take considerably longer to develop. Moreover, even though passive immunization may require repeated applications, MAbs delivered to a mucosal surface can provide immediate protection against infection.

Potential Preventive Uses for Topically Delivered MAbs
From...

...than \$12 billion (117).

If a track record of safety and efficacy can be achieved, mucosal antibodies will probably be most useful as over-the-counter products that could reach populations...

...a supplement with food or water.

Respiratory Disease

Animal studies have demonstrated the efficacy of nasal delivery of antibodies for the prevention of RSV infection (71) and influenza (68). In one...

...provide protection for at least 1 day, and probably several days (97). If so, passive immunization of the vagina may extend protection to the occasional days when the user forgets to...

...life is primarily caused by STD pathogens present in the birth canal (126), the same mucosal antibodies could be used in a predelivery cervicovaginal lavage or applied to newborns' eyes for...

...wide variety of infectious human diseases. Recent advances allow development of a new era of mucosal mAb-based products. These advances include the development of combinatorial libraries for rapid selection of...

...rapidly than most vaccines and antimicrobial drugs, MAbs may prove useful for combating emerging pathogens. Mucosal infections account for a large percentage of infectious disease-related illness and deaths; hence topical passive immunization with MAbs may offer a new opportunity for improving public health. Finally, many of the remaining safety issues regarding the human use of mucosal MAbs are likely to be addressed by clinical trials now under way.

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Campylobacter jejuni -- An Emerging Foodborne Pathogen. (Statistical Data
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... stool samples of children with diarrhea. In 1913, McFaydean and
Stockman identified campylobacters (called related Vibrio) in fetal
tissues of aborted sheep (1). In 1957, King described the isolation
of related Vibrio from blood samples of children with diarrhea, and
in 1972, clinical microbiologists in Belgium first isolated
campylobacters from stool samples of patients with diarrhea (1). The
development of selective growth media...
...for months or become chronic.

Both GBS and Reiter syndrome are thought to be autoimmune
responses stimulated by infection. Many patients with Reiter syndrome
carry the HLA B27 antigenic marker (8). The pathogenesis of GBS (9)
and Reiter syndrome is not completely understood.

Treatment...

...patients who have high fever, bloody diarrhea, or more than eight stools
in 24 hours; immunosuppressed patients, patients with bloodstream
infections, and those whose symptoms worsen or persist for more than...

...drugs in humans and animals is relatively unrestricted. A 1994 study
found that most clinical isolates of *C. jejuni* from U.S. troops in
Thailand were resistant to ciprofloxacin. Additionally, nearly one third of
isolates from U.S. troops located in Hat Yai were resistant to
azithromycin (11). In the...

...Minnesota (14). In a 1997 study conducted in Minnesota, 12 (20% of 60
C. jejuni isolates obtained from chicken purchased in grocery stores
were ciprofloxacin-resistant (14).

Pathogenesis

The pathogenesis of...

...specific factors. The health and age of the host (2) and *C.*
jejuni-specific humoral immunity from previous exposure (15)
influence clinical outcome after infection. In a volunteer study, *C. jejuni*
...

...jejuni infection, but none has a proven role (17). Suspected
determinants of pathogenicity include chemotaxis, motility, and
flagella, which are required for attachment and colonization of the
gut epithelium (Figure 2) (17). Once...

...*C. jejuni* organisms from specimens (e.g., stored foods or swabs exposed
to oxygen) (19). Isolation can be facilitated by using selective
media containing antimicrobial agents, oxygen quenching agents, or a...

...atmosphere, thus decreasing the number of colonies that must be screened
(18, 19).

Subtyping of Isolates

No standard subtyping technique has been established for *C. jejuni*.

Soon after the organism was described, two serologic methods were developed, the heat-stable or somatic O antigen (20) and the heat-labile antigen schemes (21). These typing schemes are labor intensive, and their use is limited almost exclusively...

...typing schemes have been developed on the basis of the sequence of fla A, encoding flagellin (23); however, recent evidence suggests that this locus may not be representative of the entire...

...farm visits (e.g., school field trips) during the temperate seasons. In contrast, sporadic *Campylobacter* isolates peak during the summer months (Figure 1). A series of case-control studies identified some...

...pecked by wild birds.

In the United States, infants have the highest age-specific *Campylobacter* isolation rate, approximately 14 per 100,000 person years. As children get older, isolation rates decline to approximately 4 per 100,000 person years for young adolescents. A notable feature of the epidemiology of human campylobacteriosis is the high isolation rate among young adults, approximately 8 per 100,000 person years. Among middle-aged and older adults, the isolation rate is (is less than) 3 per 100,000 person years (2). The peak isolation rate in neonates and infants is attributed in part to susceptibility on first exposure and...

...but nonculturable state," characterized by uptake of amino acids and maintenance of an intact outer membrane but inability to grow on selective media; such organisms, however, can be transmitted to animals...

...of human infection. Most retail chicken is contaminated with *C. jejuni*; one study reported an isolation rate of 98% for retail chicken meat (52). *C. jejuni* counts often exceed (10. sup...

...that drank unchlorinated water (42,44). Experimentally, treatment of chicks with commensal bacteria (56) and immunization of older birds (57) reduced *C. jejuni* colonization. Because intestinal colonization with campylobacters readily occurs...

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)Cholera-like presentation in *Vibrio fluvialis* enteritis. (Case Report)(medical research)(includes related article "Key Points")

Allton, David R.; Forgi one, Michael A., Jr.; Gros, Sheila P.
Southern Medical Journal, 99, 7, 765(3)
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RECORD TYPE: Fulltext TARGET AUDIENCE: Professional
WORD COUNT: 1772 LINE COUNT: 00150

Cholera-like presentation in *Vibrio fluvialis* enteritis.(Case
Report)(medical research)(includes related article "Key Points")

TEXT:

...at a seafood buffet on the Gulf Coast. The patient's stool culture
grew only *Vibrio fluvialis* on TCBS agar, and his diarrhea and
profound acidosis completely resolved within 24 hours...

Key Words: *Vibrio fluvialis*, enteritis

Vibrio fluvialis is a halophilic, polarly-flagellated,
Gram negative rod that has been implicated in both outbreaks and sporadic
cases of acute gastroenteritis in humans. *Vibrio* species are
concentrated by oysters and other filter feeders and are frequently
isolated from brackish surface waters of the coastal United States. *V*
fluvialis was first isolated in Bahrain in 1975 from the stool of a
patient with diarrhea. Not until 1981 did the Centers for Disease Control
receive its first isolate from a patient who had *V fluvialis*
gastroenteritis residing in the United States. (1) Originally...

...vibrios by the Centers for Disease Control in 1980, the bacterium was
described and named *Vibrio fluvialis* by Lee et al in 1981. (2)

Case Report

A 72-year-old male...

...18 per minute, and pulse oximetry of 98% on room air. Physical
examination revealed dry mucous membranes, regular heart rate, and
clear lungs. The patient had normal bowel sounds and a...

...samples before antibiotics were positive for occult blood and fecal
leukocytes, and culture ultimately identified *Vibrio fluvialis* as the
sole pathogen on TCBS agar. Levofloxacin was discontinued after one dose on
...

...the onset of symptoms with the most common vehicle being raw oysters. In
2002, 36 isolates of *V fluvialis* were reported to the CDC, with 12
occurring in the Gulf Coast states of Florida, Alabama, Mississippi,
Louisiana, and Texas. Of the 36 isolates, 29 were isolated from
stool samples. (5)

Though diarrhea in general can cause electrolyte disturbances, none
of the...

...his condition. In addition, the patient's stool was negative for
Clostridium difficile toxin, rotavirus antigen, and adenovirus
antigen.

In addition to causing gastroenteritis, (4,6-8) *V fluvialis* has been
implicated in cerebritis...

...States. However, only the cholera agents are nationally notifiable; the
true number of the remaining *Vibrio* infections is greater than
reported. Though multiple case reports of diarrhea have been reported in...
...this paper.

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The pessimist complains about the wind; the optimist expects it to...
...62035. Email: David.Allton@eesler.af.mil

Accepted April 5, 2006.

RELATED ARTICLE: Key Points

* *Vibrio fluvialis* is often isolated from brackish waters of the coastal US and has been implicated in gastroenteritis in humans

... DESCRIPTORS: *Vibrio* infections

17/3, K/53 (Item 9 from file: 149)
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01988263 SUPPLIER NUMBER: 73924880 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Whole genome sequencing of methicillin-resistant *Staphylococcus aureus*.
Kuroda, Makoto; Ohta, Toshiro; Uchiyama, Ikuo; Baba, Tadashi; Yuzawa,
Harumi; Kobayashi, Ichizo; Qui, Longzhu; Oguchi, Aki; Aoki, Ken-ichi;
Nagai, Yoshimi; Lian, Jianq; Ito, Teruyo; Kanamori, Mitsum; Matsumaru,
Hiroyuki; Maruyama, Atsushi; Murakami, Hiroyuki; Hosoyama, Akira;
Mizutani-U, Yoko; Takahashi, Noriko K; Sawano, Toshihiko; Inoue, Ryu-ichi;
Kaito, Chikara; Sekimizu, Kazuhisa; Hirakawa, Hiideki; Kuhara, Satoru; Goto,
Susumu; Yabuzaki, Junko; Kanehisa, Minoru; Yamashita, Atsushi; Oshima,
Kenshiro; Furuya, Keiko; Yoshino, Chie; Shiba, Tadayoshi; Hattori, Masahira;
Ogasawara, Naotake; Hayashi, Hiideo; Hiramatsu, Keiichi

The Lancet, 357, 9264, 1225

April 21,

2001

PUBLICATION FORMAT: Magazine/Journal; Refereed ISSN: 0099-5355

LANGUAGE: English RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE:

Professional

WORD COUNT: 10338 LINE COUNT: 01076

... determined by shot-gun random sequencing. N315 is a methicillin-resistant *S aureus* (MRSA) strain isolated in 1982, and Mu50 is an MRSA strain with vancomycin resistance isolated in 1997. The open reading frames were identified by use of GAMBLER and GLIMMER programs...

...explains why *S aureus* is capable of infecting humans of diverse genetic backgrounds, eliciting severe immune reactions. Investigation of many newly identified gene products, including the 70 putative virulence factors, will...

...and anaerobic conditions, in which it forms grape-like clusters. Its main habitats are the nasal membranes and skin of warm-blooded animals, in whom it causes a range of infections...

...antibiotic effective against it, but in 1997, a vancomycin-resistant *S aureus* (VRSA) was also isolated. (3,4) We are now exposed to the threat of MRSA without having developed any...

...strain N315 and the other from VRSA strain Mu50.

Methods

Bacterial strains

MRSA N315 was isolated in 1982 from the pharyngeal smear of a Japanese patient, and VRSA Mu50 was obtained...

...the pus of a Japanese male baby with a surgical wound infection that did not respond to vancomycin. Both strains belong to the clonotype II-A, which is prevalent in Japan...

...the sequences of the regions were clustered and aligned, units of repetitive elements were manually extracted. A representative sequence that covered every extracted region was searched against the genome by FASTA. A more comprehensive search was done by...in the suppression of mid-cell septum formation during sporulation, and the mreBCD genes are responsible for rod-shape morphogenesis, is absent en bloc from the *S aureus* genome. Although the...and glycosyltransferase activities are reported to be in separate fractions of the *S aureus* cell extract. (12) This finding strongly indicates the presence of a monofunctional glycosyltransferase in *S aureus*. So...

...3.5 mol/L sodium chloride--a characteristic that has long been used for efficient isolation of *S aureus* from clinical specimens. Food poisoning is also intimately associated with this property...

...bacteria. We identified an *S aureus* Kdp operon encoding an ATP-dependent transport system probably responsible for the osmolarity resistance of the organism. This operon consists of five genes whose predicted...

...forms characteristic yellow colonies, owing to the production of triterpenoid carotenoids located in the cell membrane. Many *S aureus* strains freshly isolated from infected patients are highly pigmented; their non-pigmented derivatives are more sensitive to desiccation...other than Sigma70 and SigmaB are involved in the precise regulation of sporulation process or flagella motility. (11) Therefore, that *S aureus*--a non-sporulating and immobile bacterium--possesses only two sigma...

... associated with the initiation of bone infection. (27) In fact, neither of the strains we isolated were associated with infection of skeletal tissues: Mu50 was isolated from a patient with wound infection, and N315 from a pharyngeal ... aureus is one of the main causes of fatal bacterial endocarditis. However, the primary adhesin responsible for its colonisation onto heart valves has not been identified yet. These new proteins, EbhA...

... ORFs might be worth investigation to gain an understanding of bacterial interaction with the host immune system

One of the above open reading frames (SA1751) encoding an MHC homologue is truncated...

... in pathogenic bacteria. (32) Such phase variation might enable the bacterium to modulate the host immune system

The intact *ica* and *cap* loci for biofilm formation and type-5 capsule formation... bacterium's ability to adapt to environmental selective pressures such as antibiotics and the human immune system

Besides vancomycin resistance, Mu50 expresses high-level β -lactam resistance (minimum inhibitory concentration (MIC)...

... Given this close relatedness, detailed sequence comparison and gene expression studies will ultimately identify genes responsible for vancomycin and high β -lactam resistance.

One of the most striking observations in this... *Neisseria* and *Salmonella*, *S. aureus* might not have developed a system of evading the host immune response as the main strategy for survival. On the contrary, *S. aureus* seems to challenge host immune response by eliciting regional inflammation and subsequent abscess formation. To be shut in inside the abscess...

... the design of the study and to the writing of the paper. Keiichi Hiramatsu was responsible for experimental design and interpretation of data in both N315 and Mu50 genome projects, and... NF, Gotz F, Bruckner R. Identification of a new repetitive element in *Staphylococcus aureus*. *Infect Immun* 2000; 68: 2344-48.

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...

... Organism of origin
frame

SA0165	Synechocytis
SA0171(*)	Plant mitochondria
SA0565(*)	Thermophilic Archaea/eubacteria
SA0914	Clostridium Vibrio
SA1136	Aeropyrum
SA1974(*)	Eukaryotes
SA2010(*)	Escherichia
SA2081(*)	Vertebrates
SA2397(*)	Pyrococcus

(*) Phylogenetic positionings of genes can...

... adhesion proteins SA2459, 2460, 2461, 2462

Others	
Myosin-crossreactive MHC class II-like protein	SA0102
Immunoglobulin G binding protein A	SA0107
Possible siderophore biosynthesis proteins	SA0116, 0117
Probable capsular polysaccharide	SA0126...
Intercellular adhesion proteins	icaA, icaD, icaB, icaC

Others	
Myosin-crossreactive MHC class II-like protein	
Immunoglobulin G binding protein A	spa
Possible siderophore biosynthesis proteins	
Probable capsular polysaccharide synthesis proteins	
Capsular...	

... protein
Fibronectin-binding proteins
Intercellular adhesion proteins

Others	
Myosin-crossreactive MHC class II-like protein	
Immunoglobulin G binding protein A	
Possible siderophore biosynthesis proteins	
Probable capsular polysaccharide synthesis proteins	
Capsular polysaccharide...	

... Intercellular adhesion proteins Cell-cell aggregation on infected tissues

Others	
Myosin-crossreactive MHC class II-like protein	Potential immune
disorder	in host

Immunoglobulin G binding protein A	Potential
immune disorder	
Possible siderophore biosynthesis proteins	in host Iron uptake
Probable capsular polysaccharide synthesis proteins	Unknown
Capsular polysaccharide synthesis proteins	Possible escape from immune system
Possible iron-binding protein	Iron uptake
Probable lipoproteins	Unknown
Possible iron permease components	Iron...
...Iron uptake components	
Ferrichrome ABC transporter FhuD homolog	Iron uptake
IgG-binding protein SBI	Potential immune
disorder	
Possible iron transport proteins	in host Iron uptake
Ferrichrome ABC transporter FhuD homolog	Iron...

17/3, K/54 (Item 10 from file: 149)
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01812222 SUPPLIER NUMBER: 53478898 (USE FORMAT 7 OR 9 FOR FULL TEXT)
 Science, medicine, and the future: Microbial genome sequencing-beyond the
 double helix.
 Jenks, Peter J
 British Medical Journal, 317, 7172, 1568(1)
 Dec 5,
 1998
 PUBLICATION FORMAT: Magazine/Journal ISSN: 0959-8146 LANGUAGE: English
 RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Professional
 WORD COUNT: 3454 LINE COUNT: 00302

... adhere to host cells, adapt to the host's microenvironment, and avoid the host's immune defences) is regulated by multiple repeating sequences. (3) These repeating sequences can therefore be used as markers for genes important in mucosal colonisation and the interaction between the microbe and its host.

Computer analysis can also be...

...a gene will result in the loss of a certain function (for example, loss of motility), and it is then possible to determine if loss of this function affects the ability... of microorganisms and has already identified important virulence genes in *Salmonella typhimurium*, *Staphylococcus aureus*, and *Vibrio cholerae*. (5-7)

Other techniques that allow a more global approach to the study of...

...and are therefore ideal for examining clinical samples for microbial pathogens. Target DNA would be extracted from the sample and labelled with fluorescent dye, before being hybridised to the miniaturised probe...

...resistance. Consequently, a single hybridisation reaction would provide information on the diagnosis, predict the probable response to treatment, and provide useful data for clinical epidemiology studies. Once the problem of extracting clean target sequences ... may be protective. This is achieved by identifying proteins that are known to be major antigens in other species or predicting which proteins are expressed on the cell surface and therefore likely to be immunogenic.

Once identified, these can be purified and studied for protective effect, either alone or in synergy with other antigens. A system that permits direct screening of the entire genome of a micro-organism for immunogenic antigens has also recently been described. (13) Such a system has considerable potential for the development...

... gonorrhoeae and *Neisseria meningitidis* *Rickettsia prowazekii* *Staphylococcus aureus* *Streptococcus pneumoniae* and *S. pyogenes* *Treponema pallidum* *Vibrio cholerae*

Parasites

Brugia malayi *Cryptosporidium parvum* *Leishmania major* *Plasmodium falciparum* *Pneumocystis carinii* *Schistosoma mansoni* *Trypanosoma*...

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17/3, K/55 (Item 11 from file: 149)
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01707022 SUPPLIER NUMBER: 19565402 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Cholera. (Seminar)

Sanchez, Jose L.; Taylor, David N.

The Lancet, v349, n9068, p1825(6)

June 21,

1997

PUBLICATION FORMAT: Magazine/Journal; Refereed ISSN: 0099-5355

LANGUAGE: English RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE:

Professional

WORD COUNT: 4877 LINE COUNT: 00385

... since surveillance began. October, 1992, saw another unprecedented epidemiological event; a new epidemic strain of *Vibrio cholerae* emerged in India and Bangladesh. 3 This cholera toxin (CT)-producing strain was the...

... it has since been classified as *V. cholerae* O139 Bengal. 3 The lack of cross-immunity between the Bengal strain and other O1 cholera strains led to major epidemics of cholera...

... stools are not cultured for *V. cholerae*.

Microbiology of *V. cholerae*

V. cholerae is a motile, curved, gram-negative bacillus, first described in 1854 in Italy by Filippo Pacini. 13 In...

... species. 14 Of the 139 serogroups, as determined by the composition of the major surface antigen of the cell wall (O), only two, O1 and O139, have been associated with epidemics; these two serogroups produce cholera toxin, which is responsible for the fluid secretion. Other serogroups have only been associated with sporadic cases and small...

... and Hikoji, based on quantitative differences of factors A, B, and C

of the O antigen.

V cholerae O1 strains are also divided into two biotypes, classical and El Tor. Isolates from the third pandemic (1852-59) to the sixth (1899-1923) were caused by the...

...O1 biotype El Tor, but there is a mutation in the genes producing the O antigen. 16 O139 strains can produce a polysaccharide capsule and have an increased capacity both for in non-endemic areas where most of the population is non-immune. 18, 19 Under these circumstances the attack rates can be as high as 10% and...

...the epidemic to an endemic phase occurs after a large proportion of the population is immune or semi-immune. Previous immunity decreases illness in adults so higher attack rates are seen in children and in women...

...are present, have indicated that infection with classical organisms provides more potent and long-lasting immunity than infection with El Tor. In Peru, where outbreaks were caused exclusively by V cholerae...

...4500 cases in 1996 and this decrease was at least in part due to heightened immunity. During the endemic phase secondary transmission of cholera occurs, principally by intrafamilial spread of infection...

...living bacterial flora in estuarine areas. By contrast, V cholerae O1 is very difficult to isolate unless there is cholera in the population. The persistence of V cholerae within the environment...

...in the population of free-living V cholerae. The periodic introduction of such infectious environmental isolates into the human population, through ingestion of undercooked shellfish and seafood, is probably responsible for isolated foci of endemic disease in the US Gulf Coast and Australia and for the clusters...

...vascular collapse. The patient becomes lethargic or stuporous with sunken eyes and cheeks and dry mucous membranes. Decreased skin turgor (skin-pinch sign) is found in all such cases. Urine flow... storage containers is important in maintaining the water supply.

Recent advances in vaccine development

Parenteral, whole-cell cholera vaccines have been in use since the late 19th century. Controlled trials in the...

...SBL Vaccin AB), developed in the late 1980s, was also found to be safe and immunogenic in volunteers. 41 Immunity is conferred 7-10 days after the second dose. This oral vaccine, given in two...

...inactivated vaccines is the need for two or three doses, 1-2 weeks apart. If immunity could be obtained more rapidly, a vaccine could be considered as an option for immunisation in the military and/or for travellers and for the control of threatened cholera epidemics...

...103-HgR (Orchol Berna; Swiss Serum and Vaccine Institute, Berne, Switzerland). This vaccine confers an immune response (and protection in challenged volunteers) within 8 days. 44 It is safe and produces after one dose, in the immunologically naive individual, a vibriocidal immune response that approximates natural infection.

In the volunteer challenge model, CVD103-HgR produces higher protection against... O139 among all age groups in areas where V cholerae O1 is endemic indicates that immunity to O1 type is not protective against O139. 4 Epidemiological and laboratory studies suggest that natural immunity to O1 is not protective against O139, 4 and this has been confirmed in challenge...

...illness seen with this new strain and its potential to cause large

epidemics among non-immune adults mean that attenuated *V. cholerae* O139 type vaccines are needed urgently. Such vaccines are...

...is that oral cholera vaccines, killed and live, will become readily available for use in immunisation programmes in developing countries, 49 and for travellers, expatriates, and military personnel. Other possibly important...

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...Sanchez JL, Begue R, Gaillour A, et al. Feasibility of an efficacy trial of the whole cell plus recombinant B subunit (WC/rBS) oral cholera vaccine in Lima, Peru. Proceedings of the...

...M. Cholera: pathophysiology, clinical features, and treatment. In: Wachsmuth IK, Blake PA, Osvik O, eds. *Vibrio cholerae and cholera: molecular to global perspectives*. Washington, DC: American Society for Microbiology, 1994: 229...

...et al. Randomised controlled comparison of single-dose ciprofloxacin and doxycycline for cholera caused by *Vibrio cholerae* O1 or O139. *Lancet* 1996; 348: 296-300.

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41 Sanchez JL, Trofa A, Taylor DN, et al. Safety and immunogenicity of the oral, inactivated, whole cell plus recombinant B subunit of cholera toxin (WC/rBS) cholera vaccine in North American volunteers...

... 1446-49.

42 Sanchez JL, Vasquez B, Begue RE, et al. Protective efficacy of oral whole-cell/recombinant-B-subunit cholera vaccine in Peruvian military recruits. *Lancet* 1994; 344: 1273-76.

43...

...MM Tacket CO. Recombinant live cholera vaccines. In: Wachsmuth IK, Blake PA, Osvik O, eds. *Vibrio cholerae and cholera: molecular to global perspectives*. Washington, DC: American Society for Microbiology, 1994: 395...

...TS, Taylor DN, et al. Peru-15, an improved live attenuated oral vaccine candidate for *Vibrio cholerae* O1. *J Infect Dis* 1995; 172: 1126-29.

47 Morris JG, Losonsky G, Johnson JA, et al. Clinical and immunologic characteristics of *Vibrio cholerae* O139 Bengal infection in North American volunteers. *J Infect Dis* 1995; 171: 903-08.

48 Coster TS, Killeen KP, Waldor MK, et al. Safety, immunogenicity and efficacy of live attenuated *Vibrio cholerae* O139 vaccine prototype. *Lancet* 1995; 345: 949-52.

49 Levine MM Oral vaccines against...

17/3, K/56 (Item 12 from file: 149)
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01617035 SUPPLIER NUMBER: 18242681 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Oligosaccharide anti-infective agents. (Review Article)

Zopf, David; Roth, Stephen
The Lancet, v347, n9007, p1017(5)
April 13, 1996

PUBLICATION FORMAT: Magazine/Journal ISSN: 0099-5355 LANGUAGE: English
RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Professional
WORD COUNT: 3996 LINE COUNT: 00343

...ABSTRACT: to the pathogen and are flushed out the bacterial or viral invader in the mucous layer, thus eliminating potential infection. Researchers propose a liquid formula of human oligosaccharides as a...

...gastrointestinal mucosa. Other pathogens which might be treatable with oligosaccharide anti-adhesives include *Escherichia coli*, *Vibrio cholerae*, and *Cryptosporidium parvum*

TEXT:

...The first line of defence against these infectious diseases consists of decoy oligosaccharides in the mucous layer that lines all exposed epithelial cells and in saliva, tears, urine, sweat, and breast...

...broad variety of infectious diseases. In theory, specific human oligosaccharides should be effective, safe, non-immunogenic alternatives to, or supplements for, conventional antibiotics. Furthermore, because oligosaccharides are not bactericidal, resistance to...

... Influenza viruses and many other human pathogens possess a surface protein that complexes with specific, membrane-bound oligosaccharides on human cells.³ The non-covalent protein/carbohydrate interactions at individual sites...

...closely parallels their capacities to recognise and attach specifically to epithelial cells that line the mucous membranes. To colonise a mucosal surface, a microbe must resist clearance via mechanical flow of secretions, avoid local immune defences, and obtain adequate nutrition in an environment highly regulated by specialised host epithelial cells. Normally functioning human mucosal surfaces effectively clear hundreds of non-adherent microbial species every day.

The pathogen proteins (called...

...less suitable as drugs because of their large size (50 kDa or so) and potential immunogenicity. Thus, the most attractive strategy for developing antiadhesive therapeutic agents is to use soluble forms of the human oligosaccharide component, which are small (about 1 kDa) and non-immunogenic.

Host range and tissue tropism

The vast majority of specific adhesion events between pathogen and...
...microbial surface proteins that recognise carbohydrate chains on glycoproteins or glycolipids that are anchored onto mucosal surface membranes.⁶ Many bacteria produce hair-like pili tipped with adhesion molecules that can...

...to chemically unique carbohydrate receptors.⁷ Selective expression of these receptors on cells that line mucosal surfaces provides a molecular basis for the well-known host range and tissue tropism of common pathogens. For example, up to 90% of *Escherichia coli* strains isolated from the urinary tract of children with acute pyelonephritis are coated with P-pili that...

...tract.⁸ Differences in the fine specificity of PapG adhesins expressed by *E. coli* strains isolated from man and the dog correlate with species-related differences in display of globoseries glycolipids...

...class of pili determines virulence and host range of enterotoxigenic *E. coli* K99, an organism responsible for outbreaks of life-threatening diarrhoea in piglets, calves, and lambs. The target most avidly...

...generated, molecular signals commonly induce the regulated expression of adhesins and other gene products.¹¹ *Vibrio cholerae*, as it passes through the human stomach, utilises a heat shock sigma factor to turn off transcriptional expression of pili, while increasing motility and chemotaxis. When these vibrios encounter conditions more favourable for colonisation in the lower gut...

...lacking, phase variants that fail to retain expression of adhesins and other factors required for mucosal colonisation may emerge.

Streptococcus pneumoniae, which colonises 40% of individuals without causing symptoms, can undergo...

...and infectious transparent phenotype to a poorly adhesive, non-colonising opaque phenotype.^{12, 13} Freshly isolated organisms bind buccal epithelial cells by specific attachment to the carbohydrate sequence Gal b1-4 GlcNAc of adhesion receptors. *Pseudomonas aeruginosa* produces neuraminidase in response to the hyperosmolar environment of the lungs of patients with cystic fibrosis.¹⁶ Neuraminidase cleaves...

...of carbohydrate adhesion receptors. Heritable differences in the ABO, Lewis, and P carbohydrate blood group antigens lead to differences in expression of carbohydrate receptors in extrahepatoepithelial tissues,

especially epithelial cells lining...

...4Gal receptors that support attachment of uropathogenic P-piliated E coli. Careful comparison of glycolipids extracted from the vaginal cells of ABO secretors and non-secretors revealed that the fucosylation of ...

...bind efficiently to a microbial adhesin,⁶ but is more likely to be toxic and immunogenic than is a carbohydrate homologue. An analogue can be designed to fit a particular carbohydrate...

...or lectin but it is unreasonable to expect the analogue to be considered "self" by immune cell receptors.

Monovalent vs polyvalent

The strength of intercellular adhesions that are mediated by non...

...other hand, polyvalent compounds are no longer natural molecules and may be toxic and immunogenic.

Oligosaccharide delivery

Short-chain oligosaccharides are typically highly water-soluble, and extremely stable to heat...

...that naturally adhere via type 1 fimbriae to branched high mannose chains N-linked to membrane glycoproteins.⁶ Globotetraose was used in mice²¹ and Gal α 1-4Gal β OMe in monkeys²² to prevent urinary...dose of enterotoxigenic E coli K99.²³

Human milk paradigm

The protective effects of non-immunoglobulin fractions of human milk against infections of the gastrointestinal, respiratory, and urinary tracts during the...

...to 20 mg/kg beyond 10 weeks.²⁷ Thus, nature bathes the nasopharyngeal and gastrointestinal mucosal surfaces of nursing infants with high concentrations of oligosaccharides whose capacity to block adhesion of...

...by a single receptor homologue can be sufficient to tip the complex microecological balance toward mucosal clearance in vivo.

For example, an infective dose of a strain of S pneumoniae that...

...adaptive molecular fit between a microbial adhesin and a carbohydrate sequence characteristically displayed by host mucosal cells.

Organisms cleared by this means from a mucosal surface have, in effect, simply failed to find a host. The likelihood of selecting a...

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... DESCRIPTORS: Immunological aspects

17/3, K/57 (Item 13 from file: 149)
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01489914 SUPPLIER NUMBER: 15828324 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Cholera vaccines: fighting an ancient scourge. (Cover Story)
Mekalanos, John J.; Sadoff, Jerald G.
Science, v265, n5177, p1387(3)
Sept 2,
1994
DOCUMENT TYPE: Cover Story PUBLICATION FORMAT: Magazine/Journal ISSN:
0036-8075 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
TARGET AUDIENCE: Academic
WORD COUNT: 2323 LINE COUNT: 00185

TEXT:

Cholera is a potentially lethal diarrheal disease caused by the Gram-negative bacterium *Vibrio cholerae*. This disease has a long history; descriptions of it can be found in Sanskrit...

Until recently, epidemic strains of both biotypes characteristically produced a serotype lipopolysaccharide O antigen, termed O1, which is known to be one of the primary targets of a protective immune response to cholera. In October 1992, however, a new serogroup of *V. cholerae* (designated O139 or...

...El Tor O1 strains but have acquired new genetic information encoding a distinct lipopolysaccharide O antigen and a polysaccharide capsule (3). Epidemiological data suggest that prior immunity to the O1 serogroup of *V. cholerae* offers little protection against the O139 strains. The...

...a cholera vaccine should offer a high degree of safety and should induce long-term immunity against both overt disease and asymptomatic intestinal carriage of *V. cholerae* (the latter being responsible for the majority of infections in endemic areas). The vaccine should also be inexpensive, easy...

...efforts to develop effective cholera vaccines have produced few successes (4). Parenterally administered vaccines (killed whole-cell, lipopolysaccharide, and toxoid) have been largely abandoned because these vaccines induce only weak or short-term immunity. The limited success of these vaccines is attributed to their inability to induce a local intestinal or "mucosal" immune response. Such mucosal immunity appears to be a critical feature of natural convalescence from cholera, a highly immunizing process that provides long-lasting protection.

The strong mucosal immunity elicited by *V. cholerae* results from direct exposure of intestinal epithelial surfaces to bacterial antigens. In principle, orally administered vaccines could provide analogous exposure. Two different types of oral vaccines...

...blind, placebo-controlled field trial involving 63,498 individuals in rural Bangladesh established the safety, immunogenicity, and efficacy

of the BS-WC vaccine (5). Two or three doses of the BS...

...confer 75% protection against diarrhea caused by strains of *Escherichia coli* that produce an enterotoxin immunologically cross-reactive with cholera B subunit. This type of vaccine should be adaptable to new...

...a concept that will be tested by inclusion of an O139 strain into the killed whole-cell component of BS-WC vaccine. Potential limitations of the BS-WC vaccine include its complex...
...manufacture and easy to administer (in a single oral dose) and are likely to induce immune responses that best mimic natural convalescence from cholera because they allow local expression of bacterial antigens that are not readily produced in cell culture. M M Levine and colleagues showed this...

...side effects of live cholera vaccines. One proposal, that a second bacterial toxin might be responsible (4), has been discounted because appropriately deleted strains still display a high degree of reactogenicity... studies on these El Tor O1 and O139 vaccines have been encouraging. Two types of motility-deficient vaccine derivatives, one a filamentous mutant (Peru-14) and the other a nonmotile mutant (Bengal-15), have been tested in volunteers and compared to their motile, isogenic counterparts (Peru-3 and Bengal-3, respectively). Peru-14 was well tolerated compared to...

...strains was substantially reduced or delayed in the vaccinees in both studies. Thus, mutagenesis of motility-chemotaxis genes merits further exploration as a way to reduce the reactogenicity of attenuated V...

...Organization indicate that this goal would cost Latin America alone tens of billions of dollars.

Vibrio cholerae has often played the role of Grim Reaper (see figure), but it has also...

...the fruits of what we have learned from *V. cholerae* can be applied to effective immunization. In addition, continued studies on the properties that enable *V. cholerae* to be such a potent immunogen may help to clarify the general physiology of mucosal immunity.

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...J. Mekalanos, D. Taylor, unpublished data. (18.) J. C. Clemens, D. Spriggs, D. Sack, in *Vibrio Cholerae and Cholera. Molecular and Global Perspectives*, I. K. Wachsmuth, P. A. Blake, O. Osvik... Boston, MA 02115, USA. J. C. Sadoff is in the Division of Communicable Diseases and Immunology, Walter Reed Army Institute of Research, Washington, DC 20307, USA.

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01489009 SUPPLIER NUMBER: 15805230 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Clinical aspects of Campylobacter jejuni infections in adults.

Peterson, Michael C.

The Western Journal of Medicine, v161, n2, p148(5)

August,

1994

PUBLICATION FORMAT: Magazine/Journal ISSN: 0093-0415 LANGUAGE: English

RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Professional

WORD COUNT: 4803 LINE COUNT: 00414

...AUTHOR ABSTRACT: and infected patients frequently present with abdominal pain and fever. Less frequently, C jejuni is responsible for bacteremia, septic arthritis, septic abortion, and other extraintestinal infections. Reactive arthritis, Reiter's syndrome...

...stool organism than Salmonella or Shigella species. Recurrent and chronic infection is generally reported in immunocompromised hosts.

... Campylobacter species, which inhibits the growth of other bacteria and yeast, was described.[67] Other isolation media have been outlined and include Preston, modified CCDA, (*) and Butzler media.[68] One author noted a nearly twofold increase in Campylobacter isolation rates when using the filtration method rather than standard plating on selective media.[69] DNA...

...enteritis. Methods of serotyping C jejuni strains that rely on heat-stable and heat-labile antigens have been described.[70,71]

Therapy

Because C jejuni enterocolitis is generally a self-limited...

...in 0.5% to 8.4% of organisms from developed countries; however, 65% of those isolated from a series in Thailand were erythromycin-resistant.[69] Erythromycin resistance is substantially more common C jejuni infection, and recurrent or chronic infection may be found in immunocompromised patients. Erythromycin is regarded as the antibiotic of choice when supportive therapy alone is inadequate...

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17/3, K/59 (Item 15 from file: 149)
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01483555 SUPPLIER NUMBER: 15520904 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Is protection against shigellosis induced by natural infection with *Plesiomonas shigelloides*?
Sack, David A.; Hoque, A.T.M. Shamsul; Huq, Anwarul; Etheridge, Marci a
The Lancet, v343, n8910, p1413(3)
June 4,
1994
PUBLICATION FORMAT: Magazine/Journal ISSN: 0099-5355 LANGUAGE: English
RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Professional
WORD COUNT: 2729 LINE COUNT: 00225

... ABSTRACT: *P. shigelloides*) in contaminated drinking water in developing countries may provide a form of natural immunization against *Shigella sonnei* infection (*S. sonnei*). *S. sonnei* causes shigellosis, a bacterial form of bloody...

... of the similar LPS component found in *S. sonnei*, exposure to *P. shigelloides* may confer immunity against shigellosis.
... AUTHOR ABSTRACT: to that of *S. sonnei*. Thus, exposure to *P. shigelloides* by drinking contaminated water may immunise populations to *S. sonnei*. As economic development occurs, water quality improves and populations become susceptible to *S. sonnei*. Although drinking pure water has many advantages, immunisation against *S. sonnei* may be one benefit of traditional water sources. Lancet 1994; 343: 1413...
... disease is an invasive diarrhoea, bacteria invade the mucosa of the large intestine causing severe mucosal inflammation and occasional septicaemia. By contrast with watery diarrhoea in which the small intestine is...

... in developing countries should logically facilitate infection with both species. Also, a shift toward increasing isolation of *S. sonnei* has been observed in countries undergoing economic development (transition economies).

Examples of the ratio of rates of isolation of *S. flexneri* compared with *S. sonnei* (F:S ratio) reported from developing countries include...

... 1:1 in 1990. [9] In Chile the ratio is about 1:1. [10]

Different isolation rates of the two species

Among possible explanations for variations between developed and developing countries...

... sampling techniques; infection with *S. sonnei* occurs early in life, causing the population to become immune; or exposure to other microorganisms with cross-reacting antigens immunises and protects the population. Of these potential explanations, the last appears to be most consistent...

... is the bacterium most often associated with such diarrhoea, [11, 12] *S. sonnei* is frequently isolated, [7] suggesting that this bacterium is common in the faecal flora of the host populations.

Detection bias as an explanation for the lack of *S sonnei* isolations seems unlikely because even in community-based active surveillance studies designed to detect mild illness...

...ratio is that inhabitants of developing countries are exposed to a microorganism that possesses an antigen that cross-reacts with *S sonnei*. Exposure to this other microorganism acts as a naturally...

...microorganisms. A food-borne organism or one transmitted person-to-person seems less likely to immunise a high proportion of the population because transmission would be sporadic. Also, since economic development...

...organism [14] With only one species, but multiple serotypes, [15, 16] *P shigelloides* has been isolated from surface water samples in many developing countries. [17-19] In Bangladesh, *P shigelloides* has been isolated throughout the year, and, although occurring in lower numbers (about 10^2 sup. 2 / mL) than...

...found in every sample collected (unpublished observations, A Huq). Special culture methods are needed to isolate *P shigelloides* because of its low numbers; hence, the organism's importance is frequently overlooked...

...*P shigelloides* has not been described. However, serotype 17 was the most common environmental serotype isolated in a study from eastern Europe. [15] The common LPS in *S sonnei* and *P...*

...*S sonnei* antiserum (which led to the name *shigelloides*) and by lines of identity in immunodiffusion assays when antigens from the two bacteria were compared with corresponding hyperimmune antisera. [21] The identity of the...

...*P shigelloides* can be used when measuring anti-*s-sonnei* LPS antibodies by enzyme-linked immunosorbent assay. [22]

The hypothesis is strengthened by the observation that LPS appears to be the primary protective antigen for *Shigella* spp. [24] Since this protective antigen is expressed by *P shigelloides*, protection against *S sonnei* resulting from frequent exposure to *P shigelloides* seems highly plausible.

Rabbit studies confirm that immunisation with *P shigelloides* can protect against *S sonnei*. [25] Rabbits orally immunised with either virulent or attenuated *shigellae* are protected against virulent challenge with the homologous serotype of *shigellae*. [26] Similarly, rabbits immunised orally with live *P shigelloides* serotype 17 are also protected against *S sonnei*, suggesting that...

...the result of infection with *P shigelloides* is not clear. Based on higher rates of isolation from cases of diarrhoea than from controls, some investigators have concluded that *P shigelloides* is...

...enteric pathogen, [27-31] whereas other studies have found no such association between *P shigelloides* isolation and diarrhoea. [32] Furthermore, in volunteer studies no illness followed challenge with *P shigelloides*, even...

...*P shigelloides* infection has not been forthcoming. Studies in pigs and rabbits show a mild mucosal inflammatory response in the small intestine after oral *P shigelloides* challenge, although the animals show no symptoms. [33, 36] Whether mild mucosal inflammation occurs in human beings is not known, but if it does the immune response might be enhanced.

Seroprevalence studies from Chile and Vietnam demonstrate

acquisition of anti-p-shigelloides...

...for transmitting many pathogens and there are obvious and overwhelming benefits from improving water supplies. Immunisation against *S sonnei* may be one advantage (albeit meagre) of traditional water sources.

The implications...

...point to epidemiological lessons about resistance to infection from exposure to unrelated microorganisms. Cross-reacting antigens are not limited to the LPS of *Shigella* and *S sonnei*. Cross-reactions are common among enterobacterial LPS antigens, Vi antigen of *Salmonella typhi* cross-reacts with a similar capsular polysaccharide of *Citrobacter*, [38] and the enterotoxins of *E coli* and *Vibrio cholerae* are nearly identical. [39] Thus, resistance to infection from one bacteria may be related...

...Our hypothesis also suggests the possibility of identifying genetically stable "natural vaccines" with cross-reacting antigens, which, if found to be avirulent or rendered harmless, could be used to protect against...

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...DESCR PTORS: Immunological aspects...

...Immunological aspects

17/3, K/60 (Item 16 from file: 149)
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01364917 SUPPLIER NUMBER: 12582987 (USE FORMAT 7 OR 9 FOR FULL TEXT)
 Analysis of the Escherichia coli genome: DNA sequence of the region from 84.5 to 86.5 minutes.
 Daniels, Donna L.; Plunkett, Guy, III; Burland, Valerie; Blattner, Frederick R.
 Science, v257, n5071, p771(8)
 August 7, 1992
 PUBLICATION FORMAT: Magazine/Journal ISSN: 0036-8075 LANGUAGE: English
 RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Academic
 WORD COUNT: 6368 LINE COUNT: 00570

... represent the wild type for sequencing (9). It was derived from the original K-12 (isolated in 1934) by curing it of lambda prophage and F factor without treatment by mutagens...

...vector. The M13 library clones were grown in microtiter dishes, single-stranded DNA template was isolated in a parallel process, sequence reactions incorporating internal [.sup.35S] were performed robotically by a...the ORF o121 (Fig. 1) is a GenBank-EMBL entry X05967 containing the sequence "bent19," isolated in an experiment designed to identify fragments with static bends. It is actually two separate...

...a regulatory gene of phosphatidylserine synthetase, which has a role in biosynthesis of a minor membrane phospholipid and maps to this area (26). In that case o137 may serve some function...and from complementation data (21). This gene codes for guanosine pentaphosphatase, part of the stringent response system of regulation. The next ORF is identified as mmA (31), which maps near rep...

...the two loci, rfe and rff, which participate in the synthesis of the enterobacterial common antigen (ECA) (36). ECA consists of multiple repeats of a three-sugar polysaccharide (N-acetyl-D...

...acetamido-4,6-di deoxy-D-galactose) linked to a glycerophosphatidyl residue anchoring it to the membrane. The first ORF in this region has been sequenced (37) and identified as rfe; it...

...consensus for operons that are under the overall control of flhD and flhC, involved in flagellar synthesis or chemotaxis (46). In contrast, the K. aerogenes genes are encoded by a single...

...REP element consisting of two copies of the repeat sequence. The corA sequence encodes a membrane-associated protein with a role in Mg(2+) and Co(2+) ion transport (49) and...from 38 to 41 percent when the ubi B protein is compared to LuxG proteins from Vibrio harveyi, Vibrio fischeri, and Photobacterium phosphoreum (56). In addition, the sequences from these species are as similar...Harayama, J. Bacteriol. 173, 1690 (1991)]; 40.2 percent over 226 aa with LuxG of Vibrio

fischeri [E. Swartzman, S. Kapoor, A. Graham, E. Meighen, i b i d. 172, 6797 (1990)]; 37. 7...

17/3, K/61 (Item 17 from file: 149)
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01353410 SUPPLIER NUMBER: 12031127 (USE FORMAT 7 OR 9 FOR FULL TEXT)
 Sixteen questions physicians often ask; infectious diarrhea.
 Donta, Sam T.
 Consultant, v32, n2, p119(8)
 Feb,
 1992
 PUBLICATION FORMAT: Magazine/Journal ISSN: 0010-7069 LANGUAGE: English
 RECORD TYPE: Fulltext TARGET AUDIENCE: Professional
 WORD COUNT: 3302 LINE COUNT: 00348

... also hemolytic-uremic syndrome. C jejuni was recognized as a diarrheal pathogen in the 1970s. Vibrio cholerae has long been recognized; Yersinia organisms and others that are less well known are...

... of diarrhea are Giardia, Entamoeba histolytica, and Cryptosporidium sp. These can cause diarrhea in immunocompetent persons and present a more serious problem in those who have AIDS.

Why does the...

... organism is Clostridium difficile, the major cause of antibiotic-associated colitis, which is difficult to isolate in normal persons. In fact, there can be 1,000 organisms per gram of stool... survive easily in the seemingly hostile environment of bile acids and enzymes.

6 Does the mucous lining of the GI tract work for or against organisms?

It definitely works against the...

... altering susceptibility to infection at this level.

7 What kind of protective role does the immune system play?

The immune system has an amazing fallback role. The first line of defense is local IgA. Approximately 1% of the population lacks this immunoglobulin and thus is more susceptible to certain kinds of infectious diarrheal disorders.

The next line of defense is IgG and IgM immunity. Because certain organisms can invade beyond the intestinal epithelium, humoral immunity (in addition to cell-mediated immunity) also has a role in limiting infection. Both of these immune systems probably help prevent further invasion by salmonellae, shigellae, and other such organisms. IgG may...

... role in protecting against giardiasis, which is a luminal disease. Drugs that interfere with both immune systems (such as toxic agents, steroids, and other immunosuppressive medications) and diseases such as the lymphomas impair this defense and thus increase risk for infectious diarrhea.

8 What is the role of intestinal motility? And what part is played by the normal intestinal flora?

The body's urge to...

... for medicine to slow their bowel movements. Thus, the use of agents to interfere with motility creates a dilemma. If a patient seems to have a secretory diarrhea, we most likely... may have a secretory component. Patients with salmonellosis or shigellosis often have cramps and small, mucous, bloody stools. The inflammatory response to invasion is

probably the major cause of diarrhea. The secretory effect may be explained ...

...cyclase to make cAMP; the noxious events of inflammation, still not well understood, are probably responsible for diarrhea associated with blood, mucus, and cramping. [3]

11 How do you conduct your... Agents Chemother. 1986;30:671-674.

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Vibrio vulnificus: hazard on the half shell.

Koeng, Kristi L.; Mueller, Juergen; Rose, Theodore
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Vibrio vulnificus: hazard on the half shell.

ABSTRACT: Vibrio vulnificus is a bacteria that can cause sepsis and shock. It is present in seawater and...

...by freezing or boiling. Patients with liver disease, AIDS, and diseases or treatments associated with immunosuppression, have a greater risk of becoming ill after eating contaminated shellfish. These patients should avoid...

AUTHOR ABSTRACT: Vibrio vulnificus is an extremely invasive gram-negative bacillus that causes bacteremia and shock. It should be suspected in any patient who is immunocompromised or has liver disease or hemochromatosis. Reduced gastric acidity may also increase the risk of...

...antibiotic therapy, and supportive care. Rapidly diagnosing and promptly initiating therapy are critical because V vulnificus infection is rapidly progressive and mortality approaches 100% if septic shock occurs.

TEXT:

Vibrio vulnificus is an increasingly recognized cause of sepsis that occurs in patients with preexisting liver disease or immunocompromised states who have recently ingested raw seafood. Because of dietary trends, this at-risk patient population may be eating increasing amounts of shellfish without awareness of the associated risks. V vulnificus infection is rapidly progressive and deadly if not recognized promptly and treated aggressively.

This review was prompted by the case of a patient who presented with V vulnificus sepsis after ingesting raw oysters shipped from Louisiana to her home in northern California.

History

Vulnificus comes from the Latin word for "wounding"--an appropriate name, as this species of Vibrio may cause extensive soft tissue damage. Hippocrates described what may be the first case in...

...two days after he bathed and clammed in the seawater of Narragansett Bay. [2] Although Vibrio vulnificus was first isolated by

the Centers for Disease Control in 1964, [3] the patient's symptom complex was initially mistakenly attributed to *Vibrio parahaemolyticus*.
Vibrio vulnificus was first given its name in 1979. [4,5]

Epidemiology

The peak incidence of cases...

...The organism is halophilic (salt-loving); it will not grow in a salt-free environment. *V. vulnificus* is most frequently isolated from seawater with a temperature greater than 20 [degrees] C (68 [degrees] F) and a...

...oysters most likely to be positive during warm summer months. [13] The incidence of *V. vulnificus* infection is not increased with fecal contamination of seawater, and, in fact, the organism may...

...in seafood kept at room temperature but will be killed by boiling or freezing. [9]

Vibrio vulnificus has been found in virtually every geographic location in the United States, including seawater in...

...Belgium and Australia, but most reported cases are from the United States.

Pathophysiology

Vibrios are motile, curved, rod-shaped, gram-negative bacteria. *Vibrio vulnificus* is an extremely invasive organism that commonly causes bacteremia and shock. It may invade vascular...

...which is thought to be due to the extracellular toxins produced by this bacterium [18] Subcutaneous tissue, muscle, and nerves may be completely destroyed in the course of this infection.

Iron appears to be needed for the growth of *V. vulnificus*. [6,19,20] Studies using animals show the median lethal dose for organisms producing sepsis will be lowered if iron is given as a premedication. *Vibrio* species are able to extract iron from hemoglobin and use it as a nutrient. The elevated serum and tissue iron...

...found in patients with liver disease may provide a nutrient substrate for the proliferation of *Vibrio* organisms.

Several other theories exist as to why morbidity is increased in the presence of liver disease. The shunting of portal blood containing *V. vulnificus* infection around a diseased liver may lead to septicemia. [13] Poor opsonization and a reduced...

...of hypotension is thought to be due to several toxins produced by the pathogenic *V. vulnificus*. A cytotoxin has been shown to be hemolytic in animals and causes a disruption of...

...as thiosulfate citrate bile salts is usually necessary. The laboratory should be notified that *V. vulnificus* is suspected because identification of the organism can be difficult (especially from stool specimens). [26...]

...patients have been shown to be at greater risk for complications after exposure to *V. vulnificus*. It is rare for a person without a risk factor to be affected.

High-risk...

...low gastric acid (achlorhydria or antacid or [H.sub.2] blocker use); [26,31]

* Compromised immune systems (patients with the acquired immunodeficiency syndrome [AIDS] or AIDS-related complex; patients with cancer, especially during treatment; patients ...diarrhea, and abdominal pain were all common complaints. Cultures of blood were positive

for *V. vulnificus* in 97% of these patients. Various other cultures were also positive, including cultures of cerebrospinal...

...gastroenteritis characterized by vomiting, diarrhea, and abdominal pain with a stool culture positive for *V. vulnificus*. None of the patients in this group died.

Two other large reviews of 39 [13...

...reports in the literature that emphasize the wide spectrum of disease processes caused by *V. vulnificus*. These include pneumonia and septicemia following the aspiration of seawater, [34] meningitis, [7] spontaneous bacterial...

...with necrotizing fasciitis (gangrenous erysipelas), ecthyma gangrenosum secondary to *Pseudomonas aeruginosa* or *Aeromonas* species, other *Vibrio* species infections, brown recluse spider bites, and staphylococcal or streptococcal cellulites (Table 2). [6,41...

...common than leukocytosis. Other complications include the respiratory distress syndrome and heart block.

Management

Once *Vibrio vulnificus* is suspected, appropriate cultures (of blood, wound or bullae, and stool specimens) should be done...

...saving in some cases (Table 3). [43]

As of May 1, 1988, infection due to *Vibrio* species is a legally notifiable condition in California. [9]

Clinical Implications

Although early treatment with...

...the need for education to prevent this disease from occurring (Table 4). Clinicians should warn immunocompromised patients (including those infected with the human immunodeficiency virus) to avoid eating raw seafood.

If the prevention of *Vibrio* infection is not possible, physicians must maintain a high index of suspicion to identify patients...

...antibiotic therapy begun, and blood pressure support initiated.

Summary

There are two major syndromes of *Vibrio vulnificus* infection. One of these is primary septicemia, which is usually seen in patients with underlying...by local supportive measures are the key to reducing the impressive mortality associated with *V. vulnificus* infection.

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CAPTIONS: Signs & symptoms of Vibrio vulnificus infections.

(table); Bullous skin lesions with sepsis: differential diagnosis. (table);

Management of Vibrio vulnificus infections. (table);

Educational instructions for preventing infection. (table)

... DESCRIPTORS: Vibrio--

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Development of vaccines against cholera and diarrhoea due to

enterotoxigenic Escherichia coli: memorandum from a WHO meeting.

Bulletin of the World Health Organization, v68, n3, p303(10)

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1990

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... ABSTRACT: to the World Health Organization by 35 countries. Untreated cholera, due to various strains of Vibrio cholerae 01 (VC), can result in fatality rates of 40 percent. It is estimated that...

... little effect on cholera control, since it is capable of inducing only low levels of immunity for short periods of time. Since colonization of the human intestine accompanied by bacterial adherence to the gut are essential to the pathogenesis of VC, antigens capable of stimulating antibody responses against these cellular components are currently being evaluated for inclusion in vaccines. Other experimental vaccines... using live carrier bacteria) and live attenuated strains. Strains of enterotoxigenic Escherichia coli (ETEC) are responsible for large numbers of acute diarrhea cases, especially in developing countries and among young children...

... others are unable to withstand high temperatures. To be effective against ETEC, vaccines must include antigens representative of these

components to facilitate immune responses. Candidate vaccines include an oral inactivated whole-cell purified antigen, live carrier bacteria vaccines, Colicin-E2 treated whole cell vaccine, and avirulent salmonella as a carrier for ETEC antigens. (Consumer Summary produced by Reliance Medical Information, Inc.)
 ... a significant role in the control of cholera since induce only a low level of immunity over a short period. Research is under way to develop effective oral vaccines based on nonliving organisms and atgens, or on live, attenuated strains of *Vibrio cholerae* O1. the meeting discussed the results that have recently emerged from such studies, including...

...field of two formulations of an inactivated oral cholera vaccine in Bangladesh> research on protective antigens of *V. cholerae* O1 that might lead to improved inactivated vaccines> and studies of the safety, immunogenicity, and efficacy of live cholera vaccines in volunteers. Recommendation for further research in these areas...

...of vaccines for this disease has been slow. However, important recent results on the virulence antigens of ETEC have led to the development of possible candidate vaccines, and the first of...

...among children under 3 years of age)> and O blood group. the existence of natural immunity to *V. cholerae* O1 in endemic setting is suggested by the declining attack rate with...

...O1 at least once every 13 years, and that some people may be exposed annually> immunity appears to be boosted with each infection, including asymptomatic infections.

Groups that may benefit from effective cholera immunization include children and adults in endemic areas, refugees in camps where the sanitary conditions are...

...research in the 1980s focused on the development of oral vaccines that would induce protective immunity by stimulating an intestinal immune response against one or more relevant antigens of *V. cholerae* O1.

Important antigens of *Vibrio cholerae* O1

Studies in animals and humans have shown that *V. cholerae* cell-wall lipopolysaccharide (LPS) and cholera toxin (CT) both evoke protective immune responses. Antibodies to these substances protect synergistically in the gut. Antibacterial immunity is mainly afforded by antibodies to LPS, but antibodies to other cell-associated protein antigens may also be important in this respect. Antitoxic immunity is primarily directed against the B subunit (BS) of cholera toxin.

Colonization of the human...

...aprerequisite for developing diarrhoeal disease, is complex and requires the coordinated expressions of chemotatic and motility functions, proteolytic enzymes, haemagglutinins, colonization pili, and finally, production of CT. The prevention of bacterial...

...and secreted proteins (in particular TCP and cholera toxin B subunit (CT-BS)) are potential immunogens for use in combination vaccines, in addition to LPS.

Rabbit polyclonal antiserum directed against TCP has been found to be protective in passive immunization experiments in infant mice challenged with either Ogawa or Inaba strains of *V. Cholerae* O1...predicted amino acid sequence. However, the predicted secondary structure, distribution of charged residues, and potential antigenic epitopes are conserved to a high degree between the two biotypes, which indicates that functional...

...of these, TcpG, may also function as an adhesin, and is therefore a candidate for immunization studies. In addition to the genes involved in TCP synthesis, those encode the outer membrane proteins and the production of an accessory colonization factor (AFC) are toxR-regulated. Thus, TcpA could perhaps be used an indicator of the presence of other potentially important toxR-regulated antigens during the preparation of whole-cell (WC) vaccines.

The killed oral vaccines recently tested in Bangladesh (see below) contain no detectable...

...the bacteria when the vaccine was prepared were not optimal for the expression of these antigens. Neither formalin nor heat (as used to inactivate the bacteria in the WC vaccine) seem to affect adversely the immuno-reactivity of TCP in Western blot analyses. Thus, it might be possible to improve the...

...employing production methods that ensure the expression and preservation of TCP and other ToxR-regulated antigens.

Candidate oral vaccines

Killed WC and WC+BS (WC/BS) vaccines. Killed whole-cell vaccines with or without the B subunit of cholera toxin have recently been developed and...

...holotoxin> the capacity of this subunit to bind to cell membranes may contribute to its immunogenicity. The heat-killed organisms in the vaccine provide Inaba and Ogawa LPS antigens, and the formalin-killed organisms provide heat-labile antigens. Because the BS pentamer is acid labile, the vaccine is administered dissolved in a buffer...

...Sweden, and the USA. In Bangladesh, an evaluation of the vaccine's ability to stimulate mucosal antibacterial and antitoxic immune responses showed that two or more oral doses evoked anti-LPS and antitoxin IgA antibody responses in intestinal lavage fluid that were comparable with those induced by natural disease. These responses were considerably higher and longer lasting than those induced by two intramuscular doses of the same vaccine. Oral WC/BS vaccine also induced significant antibacterial and antitoxic antibody responses in Swedish volunteers, though they were less intense than those induced in Bangladeshi of similar...

...BS component of the vaccine given orally to Bangladeshi or Swedish volunteers induced or boosted mucosal (IgA) immunological memory for at least 15 months in the Bangladeshi and 5 years in...the classical and the El Tor biotype of V. cholerae O1 was observed, and most isolates were of the Ogawa serotype. Throughout the period of follow-up, protection was greater against...

...of E. coli that produce heat-labile toxin (LT)> presumably this is due to the antigenic similarity of the B subunits of CT and the LT of ETEC.

Although the study...

...of cholera toxin ([A.sup.-.B.sup.+]). Several candidate strains have been produced that are immunogenic and protective in volunteers> however, they are not suitable for use as vaccines because 25...

...cause diarrhoea and to develop new mutants that lack this side-effect but, nevertheless, remain immunogenic.

The live vaccine candidate that is currently of greatest interest is V. cholerae O1 strain...

...subunit of CT from the pathogenic classical Inaba strain 569B, leaving intact the production of immunogenic, nontoxic B subunit. Neither the

parent strain nor CVD 103 produce Shiga-like toxin, which...

...outpatient studies of military recruits in Thailand, which were designed to evaluate the safety and immunogenicity of the vaccine, showed much poorer serological responses> the reason for this is currently being investigated.

Vaccines using live carrier bacteria. Since bacterial antigen can be more immunogenic when it is produced by a carrier organism within the intestine than when it is...live, attenuated oral typhoid vaccine *Salmonella typhi* Ty21a. This hybrid strain has been evaluated for immunogenicity and safety in about 500 volunteers, and only very minor side-effects were observed. After three doses of 2 X [10^{sup}.10] live bacteria, serum antibody responses to *V. cholerae* LPS were detected for about 50% and vibriocidal antibody responses for about 35% of the recipients. By contrast, 90-100% of the volunteers showed responses to *S. typhi* LPS. In a volunteer challenge study, three doses of [10^{sup}.10]...

...reactogenic?

-- Can a single carrier be used sequentially in the same individual to deliver different antigens?

Some of these issues are discussed below in relation to the development of candidate vaccines against enterotoxigenic *E. coli*.

Vaccines against ETEC

Epidemiology and acquisition of natural immunity

Strains of enterotoxigenic *E. coli* (ETEC) cause disease worldwide, but are especially common in developing...

...produce heat-stable toxin (ST), heat-labile toxin (LT), or both> the proportion of ETEC isolates that produce only ST, only LT, or both enterotoxins varies somewhat from country to country...

...are symptomatic also declines as age increases. Both these observations are indicative of naturally acquired immunity. These age-related changes have been observed with strains of ETEC that produce ST/LT...

...offer a few additional insights into the epidemiology of ETEC and the development of natural immunity. Travellers who journey from industrialized to developing countries experience a high attack rate for diarrhoea...

...in three studies in Africa, in 36% (range, 31-75%) of episodes. The proportion of isolates that produced ST, LT, or both and various colonization factors varied from study to study.

Important antigens of enterotoxigenic *E. coli*

To produce diarrhoea, ETEC must adhere to the gut epithelial surfaces

...

...possess these common mechanisms, consideration has been given to the feasibility of incorporating the relevant antigens in a vaccine that would be effective against a range of ETEC serogroups.

Colonization factors. The best characterized human colonization factor antigens (CFAs) are CFA/I, CFA/II, and CFA/IV (formerly called PCF8775). CFA/I is a single fimbrial antigen, whereas CFA/II and CFA/IV are both antigen complexes. *E. coli* strains that produce CFA/II possess either the CS1 or the CS2 (coli-surface-associated) fimbrial antigens and a fibrillar antigen CS3, or may possess CS3 alone. ETEC-producing CFA/IV have either the fimbrial antigens CS4 or CS5, as well as the antigen CS6, which is probably non-fimbrial. ETEC strains that produce only CS6 have also been... CFA/I, CFA/II, and CFA/IV varied from 29% to 79% of the ETEC isolated in a particular area. CFAs were mainly identified on ST/LT and ST-only strains...

...factors. The putative colonization factors CFA/III, PCFO159:H4, and PCFO166 are plasmid-encoded fimbrial antigens found, respectively, on E. coli serotypes O25:H16 and H-> O159:H4 and H20> and...

...produce CFA/I, CFA/II, and CFA/IV, when given orally or intraintestinally induce protective immunity. This suggests that they should be included in vaccines. In passive protection systems in animals...

...humans and animals have shown that ETEC infection evokes significant antitoxic as well as antibacterial immune responses in the intestine. Antitoxic immunity is directed only against LT> ST is a small polypeptide which is not immunogenic in its natural form. The anti-LT response is directed mainly against the B subunit of the molecule, which cross-reacts immunologically with the B subunit of cholera toxin.

Although STa (the form of ST produced by ETEC strains that infect humans) is not naturally immunogenic, it can give rise to neutralizing antibodies when coupled to a protein carrier. Such an approach is being used to develop ST antigens for possible use in vaccines. Both chemical coupling and recombinant DNA techniques have been used...

...of high concentrations of an STa-CT-BS fusion protein with substantially reduced residual toxicity. Immunization of experimental animals with this protein evoked detectable, but non-neutralizing anti-STa antibodies. Work...

...is hoped, will stimulate production of STa-neutralizing antibodies.

Over the past few years recombinant antigens of STa with the B subunit of LT (LT-BS) (STa-LT-BS) have also...

...that are stable and show high-affinity binding to GM1-ganglioside (the receptor for LT), immunoreactivity with monoclonal antibodies that neutralize ST and LT, and the capacity to induce anti-LT and anti-ST serum responses in rabbits immunized with a partially purified fusion protein. In evaluating the potential of these recombinant STa-LT-BS proteins as oral immunogens for protection against ETEC diarrhoea, it will be necessary to ascertain whether they have any...

...of a killed vaccine or as the products of live, attenuated bacterial vectors).

Determinants of immunity to ETEC as observed in volunteer studies. Studies in the USA have shown that after...

...LT-only strain of a heterologous serotype (O25:NM). In another study, volunteers who were immunized with a single dose of an oral attenuated cholera vaccine (CVD 103-HgR) that stimulated strong cholera antitoxin responses were not protected when challenged 1 month later with an ST/LT ETEC strain. Although...this has not been observed in volunteer studies.

Other volunteer studies have indicated that protective immunity may be evoked by fimbrial colonization factor antigens. For example, volunteers immunized once with an attenuated strain of ETEC (5 x [10⁸ sup. 10] live bacteria) that...

...by counts in duodenal fluid specimens) compared with controls, which suggests that the vaccine induced immune mechanisms in the small bowel that interfered with mucosal colonization.

In related studies, passive administration of a cow's milk immunoglobulin concentrate that contained high levels of antibody to CFA/I and LT (as well as to other ETEC antigens) provided 100% protection against challenge with ETEC strain H10407 (O78:H11, ST/LT, CFA/I ...

...of orally administered anti-ETEC antibodies provides further encouragement to seek ways of achieving active immunity with oral vaccines.

Candidate vaccines

Inactivated whole-cell purified antigen vaccine.

Research is being carried out on an oral vaccine against ETEC that would consist...

...the major O-groups associated with ST/LT production and expressing the key CFAs in immunogenic form, combined with the B subunit of LT or CT, or a nontoxic STa-B...

...of bacteria with mild formalin causes complete killing, but retention of 50-100% of the antigenicity of the different colonization factors. The CFAs of inactivated organisms are stable at 4 [degrees]C...

...8 months and when incubated in acidic gastric juice. An evaluation of the safety and immunogenicity of this vaccine in volunteers is planned for the near future.

Colicin-[E. sub. 2]-treated whole-cell vaccine. A novel method of killing ETEC bacteria has been developed that does not damage the protein antigens associated with them. This involves treatment with colicin [E. sub. 2], an endonuclease that enters...

...of receptors on sensitive strains of E. coli. Killed bacteria exhibit no change in their antigenicity or concentrations of LT enterotoxin, CFA/I, or flagellar antigens. Colicin-[E. sub. 2]-treated ETEC preparations have been tested as candidate vaccines in animals...

...coli strain H10407 given 1 month apart induced both serum IgG and intestinal IgA antibody responses to LT enterotoxin and CFA/I in 29 of 32 adult volunteers. None of the 22 placebo-immunized controls showed increased levels of these antibodies. To evaluate the protection induced by colicin-[E. sub. 2]...

...vaccinees and placebo-treated controls, were challenged with virulent ETEC strains 6-8 weeks after immunization. The vaccinees showed 75% protection against diarrhoea when challenged with either homologous or heterologous strains...

...a strain that differed in both serotype and CFA type, which suggests that other protective antigens may be important. In another challenge study, protection was demonstrated 6-8 months after vaccination...

...2]-killed E. coli have not yet been developed.

Avirulent salmonellae as carriers for ETEC antigens. With strain Ty21a as the vector, a potential multivalent live oral vaccine that expresses LT...

...has been constructed. The S. typhi derivative (strain SE12) induced a significant serum anti-LT response when injected parenterally into mice or guinea-pigs. The potential of this strain as a...

...antitoxin and intestinal sIgA antitoxin in orally inoculated mice. These mice also developed progressively increasing mucosal and serum antibody responses to the LPS of the vaccine strain. Only one strain with a single aroA mutation...

...that recipients of [aroA sup.-], [purA sup.-] S. typhi mutants develop only low serum antibody responses to the O-polysaccharide of the vaccine strain. These observations suggest that the purA defect...

...live oral vaccine, and would probably limit the effectiveness of salmonellae as vectors for heterologous antigens. As an alternative

to the *aroA* single-deletion mutant, strains with two mutations in the *aroA* pathway should be considered as potential vectors for ETEC antigens. Two mutations are considered desirable to ensure that the strain does not revert to virulence...

...consideration concerning the use of *Salmonella* species or other live bacteria as vectors for heterologous antigens is whether they remain effective when used repeatedly, especially for the delivery of unrelated antigens. It is possible that pre-existing immunity to the vector that arises from its initial use, or from natural exposure, may limit the immunological response to the heterologous antigen produced by it. Preliminary evidence indicates that mice immunized with a vector (*Salmonella* SL1438) and then re-immunized with the same vector which expresses a heterologous antigen (LT-BS) develop lower serum IgG and mucosal IgA anti-LT-BS responses than mice not previously immunized with the vector.

Research recommendations

Cholera vaccines

Killed oral whole-cell vaccine. Further research on cholera WC vaccine should seek to increase its efficacy and duration...

...the current pandemic> increasing the quantity of bacteria per dose> ensuring full expression of TCP antigen in the vaccine> and including strains that produce or hyper-produce the B subunit. a...

...to determine the extent and duration of their efficacy in adults and their safety and immunogenicity in adults and children. The efficacy of killed whole-cell vaccine and live strains should be compared in volunteers. The transmissibility to non-vaccinated persons...

...that lack this capacity but retain the other qualities required for efficient induction of protective immunity.

Alternative designs for cholera vaccine trials. Research should be carried out to develop novel designs...

...also attempt to predict cost-effectiveness in other settings.

Enterotoxigenic *E. coli* vaccines

Potential vaccine antigens. (a) Colonization factor antigens. The prevalence of specific colonization factor antigens (CFAs) among ETEC strains isolated from young children with acute diarrhoea in developing countries, especially in Africa, needs to be...

...be developed for the identification of CFAs.

(b) STa-toxoids. Research to develop safe and immunogenic STa-toxoids, based either on STa-protein conjugates or chimeric proteins (e.g., STa-LT...

...bacteria, should continue. Candidate conjugates or chimeric proteins should be evaluated for residual toxicity and immunogenicity. Using such antigens, the potential protective role of anti-ST should be evaluated in animals and, if possible...

...and protective STa toxoids in candidate oral ETEC vaccines should be explored.

(c) Possible common protective antigens. The possibility that antigens may evoke cross-protection against ETEC strains that differ in serogroup, CFA type, and production...

...confirmed, its extent should be defined and an attempt made to identify and characterize the responsible antigen(s). Killed whole-cell vaccines should be prepared by methods that are known to

preserve such antigens in immunogenic form

Killed oral whole-cell vaccines. Research to develop a safe and effective killed oral **WC** vaccine for ETEC diarrhoea...

...nontoxic STa-protein conjugate (if available) or LT-BS, or both should be evaluated. For antigens that are presumed to be important, particular care should be taken to use methods of killing and preserving bacteria that retain their immunogenic activity. Candidate vaccines should be tested for safety, immunogenicity, and efficacy in adult volunteers. Those that prove to be promising should also be evaluated for safety and immunogenicity in children.

For oral **WC** vaccine based on colicin-[E.sub.2]-treated bacteria, further...

...2].

Live, attenuated ETEC vaccines. Efforts are needed to develop and evaluate the safety and immunogenicity of ETEC strains that express selected CFAs and possibly LT-BS or an STa-LT...

...preserving live bacterial vaccines that ensure maximum viability and uniform bacterial characteristics, particularly as regards antigenic composition, with a minimum of variation between production lots. This may require an evaluation of preservation methods other than lyophilization.

In vitro correlates of immunity. Practical measures for predicting the protective value of candidate vaccines or immunizing regimens are required. In some instances, serum antibody responses may prove satisfactory as proxy measures of protective mucosal immune responses> in others, a simple and accurate measure of the local immune response will probably be required.

Improved bacterial vectors. Research to identify improved bacterial vectors for the delivery of selected antigens of V. cholerae O1 and ETEC should continue. Ideally, vectors should evoke a vigorous mucosal immune response after a single dose, without significant side-effects> this will no doubt require that the...

...vector> however, further research is needed to optimize the expression of one or several foreign antigens by this vector.

Mucosal adjuvants. The development of efficient killed oral vaccines for cholera and ETEC diarrhoea, as well as other oral or topical vaccines, may require the use of adjuvants that enhance the mucosal (sIgA) immune response. Research is required to identify such adjuvants and optimize their efficacy.

(*1) This Memorandum is based on the report (unpublished document WHO ...

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Coordinate regulation and sensory transduction in the control of bacterial virulence.

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... in compromised hosts. Mechanisms for establishment within a suitable niche, nutrient acquisition, and avoidance of immune

clearance may go unnoticed during asymptomatic infection or cause overt harm during disease. Disease may...

...the host, as well as the transition to and from an external reservoir, require adaptive responses on the part of the bacterium. These and other selective pressures appear to have directed...

...of a global regulatory network, and their expression is determined by a common regulator in response to environmental conditions.

In this review, the control of bacterial virulence is examined from the viewpoint of a stimulus-response pathway. There is evidence that bacterial pathogenesis is a process in which the infectious agent is constantly sensing its surroundings and responding in an appropriate manner. The response often involves coordinate alterations in the expression of sets of genes and operons encoding virulence...

...by the products of *virA* and *virG*. These genes are positively autoregulated encode proteins that respond to a sensory stimulus provided by wounded host cells. The nucleotide sequences of *virA* and...

...acid sequences are similar to sequences of various two-component prokaryotic regulatory systems that also respond to environmental stimuli. The current model for the action of these proteins is in fact...

...with sensory component. For example, *OmpR* controls transcription of porin genes (*ompC* and *ompF*) in response to *EnvZ*-detected changes in osmolarity.

The *VirG* protein may also act in concert with...

...residues from the amino terminus suggests a transmembrane domain, and *VirA* localizes to the inner membrane during cell fractionation. A region of about 250 amino acids near the *VirA* carboxyl terminus...

...are all sensor-transmitter proteins (Table 1), and the latter three may also span the membrane.

Functional analysis of individual systems as well as specific patterns of homology have led to...

...1. With *EnvZ/OmpR*, *VirA/VirG*, and homologous systems, the amino-terminal domain of the membrane protein is thought to be located in the periplasm and may have a specific sensory...transduction by *Agrobacterium* *vir* products conforms well with the proposed model, functionally similar systems in *Vibrio cholerae* and *Bordetella pertussis* show some interesting differences.

Coordinate Regulation of Virulence by

Vibrio cholerae

Cholera is a severe diarrheal disease caused by colonization of the human small bowel...

...the small intestine. The clearing action of peristalsis and mucus flow is countered by bacterial motility and chemotaxis. Bacterial protease, mucinase, and neuraminidase production may also aid in mucus penetration and...

...attach themselves by a mechanism that probably involves hemagglutinins and pili. Multiplication occurs on the mucosal surface and results in an adherent bacterial mass. During this process cholera toxin is produced ...

...of pili (*tcpABCDEF*) and a cluster of four genes (*acfABCD*) encode an accessory colonization factor. *Vibrio cholerae* strains carrying *ToxR* null mutations are also deficient in expression of *OmpU*, a 38-kD outer membrane protein. Conversely, production of *OmpT* (40 kD) appears to

be negatively controlled by ToxR. These...

...signals. Indeed, most of the ToxR-regulated genes were first identified as TnpA fusions that responded to environmental signals known to affect the expression of cholera toxin. These include osmolarity, pH...

...in the periplasm. Cell fractionation shows that the fusion protein is associated with the inner membrane. In addition, the ToxR-PhoA hybrid protein is still capable of activating ctx transcription in...

...and binds to the ctx promoter region in vitro as demonstrated by gel retardation assays. *Vibrio cholerae* strains containing the toxR-phoA fusion on a plasmid and a toxR null mutation on the chromosome are no longer responsive to osmolarity, whereas the effects of pH and amino acids are retained. These observations suggest that toxR is a membrane protein with a cytoplasmic amino-terminal domain mediating both transcriptional control and DNA binding, and... gene product and properties of ToxS-PhoA fusion proteins suggest that ToxS is also a membrane protein that may interact with the periplasmically located carboxyl terminus of ToxR.

A fundamental question...

...production is reduced in laboratory media at 37[deg.]C. In contrast, the osmolarity of mucosal secretions and the likely presence of amino acids due to extracellular proteases correspond to conditions favoring toxin expression in pure culture. *Vibrio cholerae* survives well in estuarine and brackish water habitats, and the efficient transition from an...

...virulence in *B. pertussis*. In 1960, Lacey reported that changes in growth environmental caused reversible antigenic alterations that are correlated with virulence. In this and subsequent studies, MgSO₄ sub. 4, nicotinic...

...locus, which encodes filamentous hemagglutinin (an adhesin), and cosmid clones containing both regions have been isolated. Expression of FhaB in *E. coli* was first detected antigenically and shown to require a 5-kb adjoining region corresponding to vir. Complementation analysis with...

...phase variants indicated that vir acts in trans and that an alteration in vir is responsible for phase variation.

Positive regulation of the pertussis toxin operon (ptx) by vir occurs at...

...in *E. coli*, both by measurement of transcriptional fusion activity and the production of FhaB antigen. The observation that phenotypic modulation occurs in *E. coli* indicates either that all of the...

...expression of vag genes in the presence of one of several different modulators have been isolated and shown to map to the vir region. These data provide additional evidence that modulation... protein subject to control by a sensor component.

Although neither the relevant signals nor the responses that occur in vivo are known, the ability of *B. pertussis* to sense its surroundings...

...infection. The dramatic serologic changes that result from cultivation under modulating conditions have been called "antigenic elimination" (2) and have been proposed as a mechanism for the establishment of a carrier...

...allowing organisms to be expelled from an infected individual. In either case, evasion of the immune response would result. It is not unreasonable to propose that selective forces generated by the human

immune system have played a role in the evolution of virulence regulation by *B. pertussis*. The...

...expressed, may provide clues to the biological significance of the vir regulon and the modulation response.

Regulation by Iron

Normally, extracellular locations in the mammalian host are severely iron restricted. The...

...affinity binding proteins therefore withhold the iron that is necessary for microbial multiplication.

A coordinated response of many bacteria to low iron includes production of iron-binding ligands (siderophores) and proteins...

...required for full virulence. The expression of several virulence-associated factors encoded by these plasmids responds to temperature and calcium as extracellular signals.

The presence of *Yersinia* virulence plasmids has been...

...not at 25[deg.]. These include a nutritional requirement for Ca^{sup.2+}, synthesis of antigens V and W, serum resistance, hemagglutinin production, autoagglutination, and synthesis of several outer membrane proteins (YOPs) encoded by the plasmid. In addition, CA^{sup.2+} has a regulatory role in that maximal production of YOPs and V and W antigens occurs at 37[deg.]C in its relative absence. The virulence plasmid of *Y. pestis* carries several *lcr* genes that are responsible for regulating gene expression in response to temperature and Ca^{sup.2+}. The products of these loci act in trans to...

...regulation of the plasmid-encoded virulence genes in *Yersinia* is complex, and the molecular mechanisms responsible for mediating the sensory response have not been fully described.

Yersinia pestis grows and multiplies within the phagolysosomes of macrophages. ...presence within the mammalian host. It is tempting to speculate that the Ca^{sup.2+} response allows differentiation between extracellular and intracellular environments. The *Y. pseudotuberculosis* *inv* gene, which encodes a...

...30[deg.]C, however, results in avirulent organisms that produce negative results in both assays. Isolation of a *lacZ* transcriptional fusion to a *S. flexneri* plasmid *vir* locus led to the...

...locations of regulated genes, and the mechanisms of control remain to be established. The mutant isolation procedure used to identify *virR* would not have identified genes encoding positive regulatory elements. Transcriptional...

...epithelial cells is an early stage in the passage of pathogenic *Salmonella* species from the mucosal surface to the underlying tissues. Enteric fever, gastroenteritis, and bacteremia share a requirement for this...

...factors that protect *Salmonellae* from the bactericidal activity of macrophage cationic proteins. Mutants have been isolated that carry *TnphoA* and *lacZ* fusions to *PhoP*-regulated genes, and some of these mutants ...

...addition, a second gene (*phoO*) lies immediately downstream from *phoP*. The *phoO* gene encodes a membrane protein with homology to the putative carboxyl-terminal kinase domains of *EnvZ* and related sensor... *AraC* (*E. coli* and *S. typhimurium*), and its expression appears to be autoregulated. *VirF* is responsible for the effect of temperature on Yop production, although its role in the response to calcium is unclear.

... DESCRIPTORS: *Vibrio cholerae*

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... premature aging disorders (George Martin, discussion leader): Ted Brown, Joe Christian.

25 July. Relationship between membrane and cell functional changes in senescence (Jim Joseph, discussion leader): Fulton Crews, Mayhr Shinitzky, Friedhelm... techniques and applications to analysis of 'Real Samples'; M. E. Meyerhoff, "Recent advances in polymer membrane based ion-selective and gas sensing electrodes."

15 August. (H. D. Abruna, discussion leader): W. R. Heineman, "Immunoassay with electrochemical detection"; C. R. Martin, "Membranes, modified electrodes and electrochemical sensors." Animal Cells and...

... Yan Kitajewski.

17 June. In vitro transcription (Philip Sharp, discussion leader): Pierre Chambon, Robert Roeder. Immune response (Fred Alt, discussion leader): Walter Schaffner, Phillipa Marrack, Malcolm Gefter.

18 June. DNA replication (Bruce...

... and supramolecular structure of basement components (Rupert Timpl, discussion leader): Heinz Furthmayr, "Organization of basement membrane macromolecules"; Antonio Martinez-Hernandez. "The organization of a well-organized basement membrane: Descemet's membrane"; Mats Paulsson, "Structure and function of basement membrane proteoglycans." Functional domains of basement membranes (George Martin, discussion leader): Robert Burgeson, "Characterization of the subbasal lamina--the anchoring fibril network"; Charles Leblond, "Relation between the basotubules of basement membrane and the microfibrils of connective tissue."

24 June. Molecular biology of basement membrane components (Richard O. Hynes, discussion leader): Bridgid Hogan, "molecular cloning, genomic organization, and expression of...

... and type IV collagen genes"; Markku Kurkinen, "Type IV collagen genes." Molecular biology of basement membrane components and receptors (Darwin J. Prockop, discussion leader): Michael Piersbacher, "Arg-Gly-Asp: link between...

... assembly"; Lance A. Liotta, "Characterization of the human carcinoma laminin receptor." New aspects of basement membrane function (Marilyn Farquhar, discussion leader): Enrique Rodriguez-Boulan, "Substrate attachment and epithelial polarity"; Mna J...

... glycoprotein constituents of the extracellular matrix." Special lecture: George E. Palade, "Control of protein and membrane traffic in eukaryotic cells."

27 June. Basement membranes in neurobiology (Uel J. McMahan,

discussion leader... State College (N)

Howard Wachtel, chairman; Betty F. Siskin, vice chairman.

9 June. M. Blank, "Membrane surface control of electrical excitation"; A. Sheppard, "Transition between strong and weak EM field influence..."

...fields on ionizing radiation sensitivity"; A. Liboff, "Bioeffects of geomagnetic fields."

12 June. A. Pilla, "Membrane kinetic models of pulsed EM field"; A. Grodzinsky, "Models of fibroblast stimulation by EM fields... and Teeth

Kimball Union Academy

Arnold J. Kahn, chairman; Irving Shapiro, vice chairman.

14 July. Immune cell influences on remodeling, resorption and inflammation (E. Arento, discussion leader); G. Mundy, "Cytokines in...

...Cosman, "Biology and biochemistry of interleukin-1"; discussants, M Horowitz, D. Lacey, S. Goldring. Intracellular membrane transport, acid vesicles and bone resorption (P. Schlesinger, discussion leader); Q. Al'Aqawi, "Role of... J. Haselgrove, "In situ imaging of growth cartilage"; A. Nanci, "Use of protein A gold immunoglobulin techniques in bones and teeth"; D. Sawyer, "Imaging free intracellular calcium"; A. Boyde, "Optical imaging..."

...18 July. Skeletal diseases of children: The chondrodysplasias (D. Rimoin, discussion leader); A. R. Poole, "Immunolocalization and immunochemical studies of cartilage"; L. A. Murray, "Collagen abnormalities in skeletal chondrodysplasias"; F. Ramirez, "Collagen gene...

...R. Watts, discussion leader); L. Smith, "Urinary oxalate in idiopathic stone-formers"; M. Favus, "Trans-membrane transport of oxalate"; M. Allison, "Intestinal bacteria and the metabolism of oxalate."

11 June. Models...

...specific human gene libraries: Construction and availability"; F. Jay, "Experimental strategies for modification of histocompatibility antigens in tumor cells"; R. Myers, "Saturation mutagenesis of cloned DNA and the analysis of gene..."

...transfer techniques in studying gene function in tumor cells."

7 August. New approaches to cancer immunotherapy (R. Herberman, chairman); J. Yang, "New approaches to therapy of cancer using activated lymphocytes and..."

...Leukemia and lymphoma"; M. Hanna, "Autochthonous colon tumor cell vaccines"; J. M. Lord, "Genetically engineered immunotoxins for cancer therapy." Tumor necrosis factor (I. J. Fidler, discussion leader); B. Beutler, "Tissue responses to tumor necrosis factor/cachectin"; D. Goeddel, "Regulation and biological properties of tumor necrosis factor... lymphotropic viruses (F. Wong-Staal, discussion leader); F. Wong-Staal, "Introduction and overview"; M. Essex, "Immunological and viral factors"; W. Haseltine, "Trans-acting regulatory factors and replication of human T-cell..."

...discussion leaders): James Metcalfe, "Ca. sup. 2+ NMR"; Fredric Fay, "Ca. sup. 2+ images of isolated cells."

11 June. (Wilhelm Hasselbach, Arnold Katz, discussion leaders): Munekazu Shigekawa, "Reaction mechanisms of SR..."

...sup. 2+ pumping"; Larry Jones, "Regulation of SR Ca. sup. 2+ pumping"; Ernesto Carafoli, "Plasma membrane Ca. sup. 2+ ATPase." (Hiroshi Iriyama, Edward Carmeliet, discussion leaders); Akinori Noma, "ATP-dependent K..."

...leader): Piet Borst, "Amplified genes and multidrug resistance"; Victor Ling and James Gerlach, "Overexpression of membrane P-glycoprotein"; Francis Sirotnak, "Interaction of lipophilic drugs with tumor cells." Novel concepts of alkylating...

...and cancer chemotherapeutic agents."

24 July. Modulation of chemosensitivity (Thomas Tritton, discussion leader): Rudy Juliano, "Membrane:membrane transfer of lipophilic drugs"; Robert F. Ozols, "Reversal of drug resistance with buthionine sulfoximine"; R. Jerrold Fulton, "Immunotoxins." New approaches to chemotherapy II (Victor Ling, discussion leader): Steven Rosenberg and Michael Lotze, "Immunotherapy with lymphokine activated killer cells and recombinant interleukin-2"; Isaiah J. Fidler, "Biological therapy of... Theoretical investigations of organic reactions in solution"; William A. Goddard, III, "Use of theory to extract mechanisms of catalytic reactions." Poster session of contributed papers.

19 August. (J. Andrew McCammon, discussion... and the design of novel drug delivery systems"; V. Raso, "Uptake and intracellular localization of immunotoxins"; L. Greenfield, "Engineering of bacterial toxins for immunoconjugates"; (Speaker and subject to be announced). Engineering improved cell recognition ligands for targeted drug delivery...

...Thorpe, chairman): P. Thorpe, "Experimental and clinical studies on T-cell elimination"; D. A. Valleria, "Immunotoxins in bone marrow transplantation"; C. B. Carpenter, "Manipulation of T-cell populations in transplantation"; S. Ackerman, "Regulatory aspects of the production and use of antibodies in man." Immunotoxins (E. Vitetta, chairman): E. Vitetta, "Immunotoxin-mediated cytotoxicity: an overview"; F. Jansen, "Immunotoxins for 'ex vivo' bone marrow purging and 'in vivo' bone marrow purging and 'in vivo' leukemia treatment"; L. L. Houston, "Preclinical testing of immunotoxins for human use."

10 July. Monoclonal antibodies in cancer imaging and therapy (N. Warner, chairman... of acyl glucuronides as a factor in the metabolic disposition of acidic drugs." Metabolism and membrane mediated alterations of the immune system (Jack Dean, discussion leader): Jack Dean, "Mechanisms of xenobiotic-induced immune alterations"; Lance Pohl, "Possible role of the immune system in the halothane-induced hepatotoxicity."

23 July. Applications of modern mass spectrometric techniques to... phytoplankton dynamics in a well-mixed estuary." (Chris D'Elia, discussion leader): Theodore Smayda, "Community responses to nutrient loading"; Edward Paasche, "Phytoplankton responses to nutrient loading in a high-salinity environment."

10 June. (Howard Seliger, discussion leader: Jon...

...depuration in Fundulus." (Charles Coutant, discussion leader): Robert Livingston, "Relationship of laboratory results and field responses of estuarine assemblages to toxic agents"; Joel O'Connor, "Estuarine population and community responses: Our ability to measure them"

12 June. (Robert Biggs, discussion leader): Henry Postma (subject to ...

...for comparative estuarine studies." (Donald Malins, discussion leader): Robert Huggett, "In-Place pollutants and biological responses"; John Couch, "Evaluation of pollution effects: Promising pathological endpoints."

13 June. (Dennis Burton, discussion leader...

...in the bacterial cell division cycle"; Stuart J. Austin, "Properties of the cis-acting site responsible for partition of P1 plasmid DNA"; Sota Hiraga, "Host mutants defective in the partition of... discussion leader): Gerald Medoff, "Mechanism of action of polyenes"; Konrad E. Bloch, "Sterol structure and membrane function"; Hugo van den Bossche,

"Cytochrome P-450 isozymes--targets for antifungal azole derivatives"; Geoffrey...

...chairman; Jack J. Hawiger, vice chairman.

16 June. Lipid mediators of cellular activation and receptor response coupling (Philip W. Majerus, discussion leader): Stephen M. Prescott, "Production of platelet-activating factor by...

...J. Rink, "Cytosolic calcium in platelet activation"; Edwin W. Salzman, "Changes in ionized calcium in response to platelet agonists." Tissue plasminogen activator (Burton E. Sobel, discussion leader): Burton E. Sobel, "Clinical...in platelets and cells of the blood vessel wall"; Carolyn Dansky, "The search for integral membrane proteins in cell adhesion"; Jack J. Hawiger, "Adhesive interactions of platelets and the vessel wall...Glucoconic acid receptor structure and activity"; Stephen Green, "Estrogen receptor structure and function"; Ranjan Sen, "Immunoglobulin gene trans-acting factor." Insulin action (T. Gelhrter, discussion leader): Harvey Lodish, "Molecular biology of the...

...Biotechnology

Holderness School

Garfield Royer, chairman; Joseph Bonaventura, vice chairman.

11 August. Solid phase immunoassay (David J. Litman, chairman): David J. Litman, "Visual immunochromatography"; J. William Freytag, "Solid phase immunometric assays"; Gunnars E. Valkirs, "Kinetics of solid phase immunoassay"; John F. Burd, "Chemiluminescent immunoassay on cellulose filaments." DNA-hybridization on solid supports (D. Gillespie, chairman): George Church, "Genomic sequencing"; Manual...

...supports."

12 August. Nonradioactive DNA probes (D. Ward, chairman): David Brigati, "Automated instrumentation for immunocytochemistry and in situ hybridization"; Henry Ehrlich, "Diagnosis of genetic and infectious diseases using selective genomic DNA..."

...Bonaventura, "Synthetic analog of oxygen/hydrogen carrying proteins: Their application in large-scale oxygen extraction and delivery systems"; Jane Richardson, "Beta bellin: An engineered protein (I)"; Bruce Erickson, "Beta bellin: An..."

...Irwin Chaiken, "Analytical affinity chromatography in biology and biotechnology"; Robert Scopes, "Strategy in enzyme isolation using affinity adsorbents." I. M. Klotz, "The clouded crystal ball."

15 August. Polymer-bound drugs/immunotoxins (M. Wilchek, chairman): Robert Langer, "Controlled release of drugs"; Richard Youle, "Immunotoxins/use in cancer therapy"; Esther Hurwitz, "Specific and nonspecific macromolecular-drug conjugates for cancer chemotherapy."

Immunochemistry and

Immunobiology

Holderness School

Ronald H. Schwartz, chairman; Ursula Storb, vice chairman.

30 June. (Ellen Rothberg, discussion leader...)

...Ronald Germain, "Molecular analysis of Ia expression, structure, and function"; Emil Unanue, "Biochemistry of antigen presentation."

1 July. (Lee Hood, discussion leader): Lee Hood, "T-cell receptors and the immunoglobulin gene super family"; Mark Davis, "T-cell receptors: Structural and functional studies"; Susumu Tonegawa, "Structure and expression of T-cell receptor genes." (Ursula Storb, discussion leader): Ursula Storb, "Expression of immunoglobulin heavy and light chain genes in transgenic mice"; Jean-Claude Weill, "Immunoglobulin gene diversity in chickens."

2 July. (Ethan Shevach, discussion leader): Ethan Shevach, "The role of

of Thyl...

...controlling their interaction"; Abraham Kupfer, "Specific cellular interactions between T helper cells and B antigen-presenting cells"; William E. Paul, "Early events in B cell activation." (Ron Schwartz, discussion leader); Richard Axel, "Genes mediating complex behavior in simple organisms?"; Daniel Alkon, "Biochemical control of membrane excitability during learning."

4 July. (William E. Seaman, discussion leader): William E. Seaman, "Reversal of autoimmunity...facilitated transport in liquid membranes"; Reed M. Izatt, "Carrier-mediated cation transport in liquid membrane systems."

Chemistry at Interfaces

Kimball Union Academy

Adrian Parsegian, chairman; Lloyd Abrams, vice chairman.

21 July...

...Mann, discussion leader): R. Hoffman, "Nanotensiometry of ultrathin films." E. Evans, "Bilayer and cell membrane mechanics."

Ion Channels in Muscle and

Other Excitable Membranes

New Hampton School

Irwin B. Levitan, chairman...discussion leader): Howard Riezman, "Yeast mutants defective in accumulation of endocytic content"; Ira Mellman, "Membrane glycoproteins of endosomes and lysosomes"; Jess Thoene, "Carrier-mediated transport of amino acids from lysosomes."

25...

...Mechanism of protein translocation"; Kai Simons, "The budding of enveloped viruses: A paradigm for membrane sorting."

Conferees are invited to present posters which will be displayed for 2 days. Abstracts, in...containing genes during mouse spermatogenesis"; Mitch Eddy, "Stage and region-specific expression of sperm antigens"; Michael Griswold, "Hormone and vitamin A regulation of sertoli cell secretion products." Cell-cell interaction during...

...Genes that code for rat seminal vesical secretions."

9 July. Hormonal induction of uterine responses (Kenneth S. Korach, discussion leader): George M. Stancel, "Role of estrogens and receptors for peptide growth factors in uterine growth"; S. K. Dey, "Differing cellular responses with different estrogens in the genital tract"; Herbert W. Dickerman, "Estrogen regulation of creatinine kinase in ...

...Medicinal Chemistry

Colby-Sawyer College

Hans Hess, chairman; Barrie Hesp, vice chairman.

28 July. Immunomodulators/biological response modifiers (Wendell Werenga, chairman): Edgar Lederer, "Structure and biological activities of muramyl peptides and trehalose diesters"; Terry G. Payne, "Structural requirements for immunosuppressive activity of cyclosporine analogs"; Steven Gillis, "Cloning, expression, and evaluation of interleukins and colony-stimulating factors...discussion leader): John Mekalanos, "Structural and functional analysis of the taxR regulatory protein of *Vibrio cholerae*"; Allison O'Brien, "Genetics of Shiga-like toxin of *E. coli*."

5 August. Toxin receptors...

...subunit structure in LPS biological activity"; Robert Munford, "Processing of LPS by animal cells." Antigenic variation of bacterial surface proteins (Magdalene So, discussion leader): Alan Barbour, "Molecular basis of antigenic variation in relapsing fever borrelia"; Janne Cannon, "Protein 2 of *Neisseria gonorrhoeae*."

7 August. Microbial invasion...

...virulence in *Yersinia pestis*"; Barry Bloom, "Mycobacteria, macrophages and modes of survival." Jonathan Uhr, "Immunotoxins: Harnessing nature's poisons."

8 August. Molecular analysis of selected microbial surface antigens (June Scott, discussion leader): June Scott, "The M protein of group A streptococcus"; Barry Eisenstein, "Cloning the antigens of *Legionella pneumophila*"; Michael Lovett, "Immunobiology of *Treponema pallidum*"

Microbiological Safety of Food
Plymouth State College (S)
Frank F. Busta, chairman; Carl...

...of sporulation"; Philipp Gerhardt, "Mechanisms of heat resistance in bacterial spores"; Alisa Hocking, "Physiological responses of fungi at reduced water activity." Spore germination (Peggy M. Foegeding, discussion leader): Peter Setlow, "Biochemical..." 18 July. Virulence determinants (Norman J. Stern, discussion leader): Neal Guentzel, "Virulence determinants of *Vibrio cholerae*"; L. Joe Berry, "Virulence of *Campylobacter jejuni* in experimental animals."

Chemistry and Physics of
Microstructure... Beachy, Tony Cashmore, Thomas Hohn, Michael Fromm
27 June. The cellular biology of the immune response (Lee Hood, chairman): Susumu Tonegawa, Fred Alt, Jerry Adams.
Molecular and Genetic Basis of
Cell Proliferation...

...of limited replicative life span." Posters on research in relevant areas are strongly encouraged.

Motile and Contractile Systems
Tilton School
Edward D. Korn, chairman; David J. Hartshorne, vice chairman.
21 July...

...a short descriptive abstract together with their conference applications.

25 July. Second messengers in motility and contractility: Fred Fry, Hiroyoshi Hidaka, Julio Vergaro, Sally Zigmund (speakers and discussants). Multiphoton Processes

Colby... Hascall, chairman; Larry Rosenberg, vice chairman.

7 July. (Roger Mason, discussion leader): Tony Ratcliffe, "Immunochemistry of cartilage proteoglycans"; Nancy Schwartz, "Synthesis and structure of cartilage proteoglycans in hybrid chondrocytes"; Marvin Tanzer...

...Metabolism of proteoglycans in wounded and confluent aortic endothelial cell cultures"; Jennifer Stow, "Basement membrane heparan sulfate proteoglycans produced by kidney and liver cell lines."

9 July. (Dick Heinigard, discussion leader... Peter J. Chiang, "Deaza nucleosides as probes for cellular functions: Predictable and unpredictable responses." Poster session. Posters will be attended from 7:30 to 9:30 p.m. and will then... oxygen delignification of kraft pulp"; R. M. Berry, "The significance of the alkaline extraction stage in kraft pulp bleaching." (D. C. Johnson, discussion leader): R. L. Farrell, "Biotechnology applied to lignin..."

...A. Rubin, "R.sup.II isofoms and their binding proteins"; G. S. McKnight, "Isolation and expression of kinase genes"; R. A. Jungmann, "Nuclear action of cyclic AMP--dependent protein kinase subunits... Miller, "Process chemistry considerations for gold recovery from alkaline cyanide solutions." Development in membrane separations (Richard D. Noble, discussion leader): Mary K. Tripodi, "Vapor dehydration of azeotropic ethanol via membranes"; Edgar...

... reversed micelles." Separative reactors (Joseph D. Henry, Jr., discussion leader): Stephen L. Matson, "Membrane conversions and bioseparations"; Philip E. Barker, "Enzyme reaction and separation in chromatography columns."

14 August. Innovative methods...

... E. Keller, II, discussion leader): Scott Lynn, "Concentration of aqueous solutions by solvent extraction"; Edward L. Gussler, "Gels as size-selective extraction solvents." Displacement chromatographic separations (George E. Keller, II, discussion leader): Csaba Horvath, "High-performance displacement chromatography."

15...

... D. Schleich, "Synthesis of metal sulfides using organosilyl sulfides"; J. B. Goodenough, "Insertion/extraction reactions as a low-temperature synthetic route to new ceramic materials."

Solid State Ionics

Brewster Academy

Gregory...

... conductors."

1 July. (A. LeMehaute, discussion leader): S. Liu, "Theory of the AC response of fractal interfaces"; Bernhardt Sapoval, "Fractal geometry of diffuse contact and associated noise"; A. Jonscher, discussion. (Walter ... applications for membranes (G. Belfort, discussion leader): C. Vandeweyer, "Recent advances in enzyme membrane reactors"; M. Hoare, "Protein recovery by precipitation/microfiltration"; K. Mani, "Bipolar membrane technology and its applications." T. Van Gassel, "Membrane distillation"; R. Narayan, "Vapor phase dehydration by membrane permeation."

25 June. Membranes as sorbents and catalysts (S. Matson, discussion leader): K. Hou, "Performance of affinity membranes for endotoxin removal"; G. Schmidt-Kastner, "Immobilized enzyme membrane reactors: Industrial application for biotransformation"; J. Lopez, "Process integration in multiphase and extractive membrane reactors." Brief progress reports on current research (J. Schultz, discussion leader): K. H. Kroner, "Recent studies with dynamic membrane filtration of microbial suspensions and homogenates." Other presentations to be selected from submitted abstracts.

26 June. Monolayer and bilayer membrane structures (S. Regen, discussion leader): D. O'Brien, "Polymerized vesicles"; T. Kunitake, "Molecular multilayer films and their transport properties"; J. Fendler, "Membrane mimetics for separation processes." Plenary lecture: Ora Kedem, "Transport equations for pervaporation in ion exchange membranes."

27...

... charge-carrying membranes (W. Deen, discussion leader): A. Grodzinsky, "Electric field control of membrane permeability"; G. Westermann-Clark, "Transport mechanisms in charged-wall, rigid microporous membranes."

Theoretical Biology and Biomimetics

Tilton...

... Evolutionary considerations in epidemiology"; Simon Levin, "Coevolution and host-parasite systems"; Alan Perelson, "Immune cell interactions: Recognition and learning." Cell receptor phenomena (Hans Othmer, chairman): Lee Segel, "Receptor adaptation: theory and..."

... kinetics and protein structure of ionic channels"; Wilfrid Rall, "Dendritic spines with excitable membrane as possible loci for neuronal plasticity"; Daniel Alkon, "Cellular mechanisms for invertebrate associative learnings." Dynamic activity of...

17/3, K/66 (Item 22 from file: 149)
 DI ALOG(R) File 149: TGG Health&Wellness DB(SM)
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... infection to man--with emphasis on Legionellosis (Richard Tyndall,
 session chairperson).

10 August. Pathogenesis and immunogenesis of aerosol induced
 infections (Edward Stephenson, session chairperson). Aerosol administration
 of therapeutic drugs in the...

...aging process'; Hans Nohl, "Electron transport and free radical
 formation.'

10 August. Possible endocrinologic and immunologic bases for
 actions of food restriction (G. Fernandes, session chairperson): Brian
 Merry, "Endocrine changes underlying the antiaging action of dietary
 restriction'; Richard Weindruch, "Role of the immune system in the
 antiaging action of food restriction.' Exercise and aging (Elsworth R.
 Buskirk, session...the biosynthesis and processing of the LDL receptor';
 Thomas L. Innerarity, "Protein determinants of apolipoproteins
 responsible for mediating lipoprotein receptor interactions'; Kurt
 Drickamer, "Structure of receptors for glycoproteins.' Poster session I...
 recognition mediating bacterial adhesion'; F. Audibert, "Synthetic analogs
 of bacterial cell walls (muramyl dipeptides) as adjuvants for
 synthetic vaccines.' E. Rosenberg, "Emulsan exopolysaccharides desorb
 bacteria from hydrophobic surfaces'; S. Nomark, "Genetics...

...in E. coli'; W. Donachie, "Transcriptional organization of a group of
 division genes'; L. Rothfield; "Membrane-murine interactions in
 bacterial cell division'; J. Walker, "Transcription of the pbpB gene of E
 ...

...Inouye, "Protein S, a development-specific surface protein of Myxococcus
 xanthus'; L. Shapiro, "Role of membrane biogenesis in the Caulobacter
 cell cycle'; M. Bayer, "Membrane adhesion site.' Porins (J.
 Rosenbusch, session chairperson): J. Rosenbusch, "Structural aspects of
 porins'; H. Nikaido...

...Pseudomonas aeruginosa: The large and the small'; U. Henning,
 "Requirements for the E. coli outer membrane protein OmpA to be
 incorporated into its membrane'; P. Reeves, "TolC, a gene for a minor
 outer membrane protein which affects outer membrane properties.'

6 July. Bacterial toxins (J. Koni sky, session chairperson): S...

...Dallas, "Bacterial toxins, an overview.' W. A. Gramer, "Colicin E1 mode
 of action'; S. Bhakdi, "Membrane insertion by staphylococcal
 alphatoxin and streptolysin O'; J. J. Donovan, "Diphtheria toxin/
 membrane interaction'; J. Mekalanos, "Genetics of toxin expression in
 Vibrio cholerae'; V. Braun, "Plasmid mutation affecting Colicin M'
 Structure and functions of membrane proteins (D. Oesterhelt, session
 chairperson): G. Khorana, "Structure and function of bacteriorhodopsin';
 K. Duncker, "Function of proline in -helix';

P. Overath, "Study of integral membrane proteins: The lesson of
 lactose permease'; P. Dimuth, "Sodium transport decarboxylases'; K. V.

Meyenburg, "Genetics...

...an ATP-driven transport system; J. S. Hong, "Energetics and reconstitution of glutamine transport in isolated vesicles"; D. Oxender, "Regulation of leucine transport in E. coli"; C. Higgins, "Peptide transport systems...

...M. Zushima, "Biosynthesis of lipoprotein in E. coli"; M. Osborn, "Mechanism of lipopolysaccharide translocation to outer membrane"; M. Tokunaga, "Modification and processing of prolipoprotein in E. coli"; J. Ghayeb, "Assembly and localization of the lipoproteins in E. coli"; A. Weissborn, "The biosynthesis of membrane derived oligosaccharides"; C. Raetz, "Metabolism and mitogenic function of monosaccharide lipid A precursors"; J. Nielsen...

...protein secretion in E. coli; W. Wücker, "Leader peptidase and M13 procoat: Reconstitution of a membrane assembly event with pure proteins"; L. Randall, "Translocation of nascent periplasmic proteins across the cytoplasmic membrane is independent of elongation"; D. Botstein, "Secretion of -lactamase"; C. Kumamoto, "Genetics of E. coli membrane proteins from Bacillus subtilis."

Biological Regulatory Mechanisms

Holderness School

Martin Rosenberg, co-chairperson; Richard Palmer, co-chairperson.

27 June. Regulation of the immune response (Lee Hood, session chairperson); Gene commitment: DNA modifications and rearrangements (Ira Herskowitz, session chairperson).

28...

...Chamberlin, session chairperson); Protein synthesis, processing, and degradation (Brian Safer, session chairperson).

30 June. Cellular responses to the environment (David Mount, session chairperson); Complex gene systems (Richard Burgess, session chairperson).

1...

...Prostaglandins, collagenase and cellular interactions in the synovium; Kendall Smith, "Cell-cell interaction in the immune system."

22 July. Hypercalcemia of malignancy: Assays for purification of factor(s) (G. R. Mundy... and defective control of an oncogene.' Cytogenetics (Sandra Wolman, session chairperson); Rebecca Taub, "Oncogenes among immunoglobulin genes"; Samuel Latt, "Structure-activity relationships in chromosomes."

25 August. Immunology (Margaret Kripke, session chairperson):

Aline Van Pel, "Mutagen-induced antigenic variants"; Hans Schreiber,

"Tumor antigens and antigenic selection"; Michael Gottlieb,

"Acquired immunodeficiency syndrome." Short presentations.

26 August. New approaches for cancer treatment (John Minna, session chairperson); Julia...

...R. W. Jeanloz, discussion leader); D. R. Bundle, "Synthesis and conformational studies on bacterial O-antigens"; C. P. J. Gaudemans, "The binding of polysaccharides to monoclonal immunoglobulins."

28 June. (P. A. Sandford, discussion leader); D. A. Brant, "Realistic molecular modeling of polysaccharide..."

...discussion leader); J. H. van Boom, "Studies directed toward the synthesis of cell wall and membrane components"; W. Pfeiderer, "Modern strategy of oligonucleotide synthesis." (D. J. Walton, discussion leader); V. M. Membrane dynamics (Fusao Hirata, session chairperson); Robert V. Farese, "Phosphatidyl inositol metabolism"; Eduardo G. Lapetina, "Phosphatidic..."

...Phenylalanine hydroxylase'; Sheldon May, "Dopamine B hydroxylase'; James Coward, "Methyl transferases"; Philippe Bey, "Monoamine oxidase."

Immunocyto-chemical analyses of neurotransmitter phenotype (Virginia Pickle, session chairperson): J. F. Pujol, "Tyrosine hydroxylase interaction..."

...Haemmerli, "Matrix in path processes"; G. Nicolson, "Matrix in pathol processes."

29 June. D. Branton, "Motility"; L. Furcht, "Motility"; R. Goldman, "Motility"; B. Huang, "Motility"; K. Robinson, "Motility."

30 June. E. Lazarides, "Cytoskeleton"; T. Pollard, "Cytoskeleton"; R. Spitzer, "Cytoskeleton"; J. Spudis, "Cytoskeleton"; G...

...Ernest A. McCulloch, discussion leader): Hal E. Broxmeyer, "Role of ion binding glycoproteins, HLA-DR antigenic determinants, and cellular interactions in the regulation of normal and leukemic myelopoiesis"; Malcolm Moore, "Maturation... Paul Kornblith, "Modification of brain tumor cells by differentiating agents"; Alan Sartorelli, "Cell differentiation in response to chemotherapeutic agents." Role of preconditioning regimens in cancer therapy (Emil Frei, III, discussion leader...

...human lung cancer'; Desmond Carney, "Cell lines from small cell lung cancer: Growth characteristics and response to radiation and chemotherapy." The role of immune cell modulation in chemotherapy (Paul Carbone, discussion leader): Sheldon Dray, "Immune modulation by cyclophosphamide or melphalan and its effects on the eradication of established tumors"; Marc E. Key, "Synergistic interaction between immunotherapy and chemotherapy."

28 July. Chronic lymphocytic leukemia as a model system in cancer chemotherapy (Kanti...

...as a guide to cancer chemotherapy'; William Plunkett, "Correlation of ara C metabolism with the response in human AML"; Saul Zimm "Pharmacokinetics of 6-mercaptopurine: A new look at an old... function of cytochrome oxidase"; Charles Hackenbrock, "Lateral diffusion and electron transfer in the mitochondrial inner membrane." (Shelagh Ferguson-Miller, poster discussion leader). Electron transport and proton pumps: (b) What is a...

...Oesterhelt, poster discussion leader). Proton coupling: What is the relative importance of bulk phase versus membrane phase protons? (Albert Lehninger, session chairperson): Albert Lehninger, "Introduction and overview"; R. J. P. Williams... session chairperson): S. Pilakis, "6-Phosphofructo 2-kinase/fructose 2, 6-bisphosphatase from rat liver: Isolation of a phosphorylated intermediate"; N. Meadow, "Regulation of sugar transport by bacterial phosphotransferase system"; G... Danielle Carre, "Sperm chemotaxis in Siphonophores"; Dale D. Hoskins, "The mechanism of action of forward motility protein." Sperm activation II (Bennett M. Shapiro, discussion leader): Jane Rogers, "Metabolic requirements of the ...

...urchin receptor for sperm; Michael Edidin, "Changes in the lipid organization of the egg plasma membrane at fertilization. Some implications for membrane structure and for early development." Gamete recognition and binding II (Jerry L. Hedrick, discussion leader...

...changes during oocyte maturation'; Lionel I. Rebhun and Gregory Fisher, "The initiation of endocytosis during membrane remodeling as an early event in the activation of sea urchin eggs"; Douglas E. Chandler... Lang, "Of mosquitos, mice, and men: Frontiers of nutrition and again."

12 August. Control of immunity and aging (C. Lang, session chairperson): C. Lang, "Glutathione and aging"; R. H. Weindruch, "Dietary restriction and its effects on immunity and aging"; L. B. Rockland, "Nutritional properties of reducing diets."

Free Radical Reactions

Hol der ness School ... epi dem i ology'; A. Jeffrey, "Structures of DNA adducts formed by derivatives of polycyclic carcinogens'; M. Poirier, "Immunoassays for carcinogen DNA adducts'; K. Randerath, "A versatile and highly sensitive postlabeling method for detecting...

...Irreversible processes in glass.'

10 August. Ionic motion and relaxation: A. K. Jonscher, "Universal dielectric response of solids'; P. Bray, "NMR studies of ionic motion in glass'; C. A. Angell, "Computer...mucus--structure and function'; Jan Forstner, "Heterogeneity in the structure of intestinal mucin'; David Gold, "Immunochemical studies on colonic mucin'; Eugene Davidson; Gordon Forstner.

4 August. Structure and function of proteoglycans...

...involvement of globo series'; Karl-Anders Karlsson, "Glycolipid structures as receptors for bacterial infection at mucosal surfaces'; Roger Laine, "Mannosyl-inositol-phosphoryl-ceramide (MIPC) and a related substance from yeast: Complete...

...protein-DNA interaction in the chicken lysozyme gene region'; Gordon Ringold, "Gene transfer of glucocorticoid responses'; Ed Milgrom, "Regulation of uteroglobin gene expression'; Gary Firestone, "Glucocorticoid regulation of protein processing.' Insulin...receptor component'; John Katzenellenbogen, "Affinity probes for estrogen receptors'; Gerald Cunha, "Stromal epithelial interactions in hormone responsiveness'; Kathryn Horwitz, "Progesterone receptors in human breast tumor cells.'

Implantable Auditory Prostheses

Tilton School

Robert...

...Mark White.

24 August. Auditory physiology and speech encoding. Eric D. Young, Charles Liberman. Feature extraction and speech perception: Dennis H. Klatt.

25 August. Perceptual aspects of speech recognition: Louis D...E. Stanley, discussion leader): R. Ziff, "Kinetic approach to the sol-gel transition, aerosol coagulation, antibody-antigen interaction, and galactose clustering'; B. Chu, "Experimental results on some polymer systems'; J. C. Wheeler...development.'

14 June. Metastases (P. Gullino, discussion leader): L. Liotta, "Attachment and destruction of basement membrane by metastasizing tumor cells'; G. Yogeewaran, "The role of tumor cell surface and shed signal glycoproteins...

...mammary cell growth and differentiation (B. B. Asch, discussion leader): H. Furthmayr, "Organization of basement membrane macromolecules'; W. R. Kidwell, "Role of the extracellular matrix in normal and neoplastic mammary cell...

...Asch, "Differential expression of keratins by mammary cells in vivo and in vitro.'

15 June. Membrane dynamics and receptor function (B. K. Vonderhaar, discussion leader): J. Dave, "Interrelations of membrane microviscosity, prolactin receptors and prostaglandins'; M. E. Costlow, "Prolactin receptor regulation in cultured rat mammary...

...the ruminant mammary gland against infection'; A. E. Beer, "The cellular components of milk, their immunological benefits and hazards to the suckling recipient.'

16 June. The Golgi apparatus and microtubules (N. J. Kuhn, discussion leader): N. J. Kuhn, "Golgi membrane permeability and its implications'; D. Dylewski, "Membrane flow during protein and lipid

secretion'; R. F. Loizzi, "Hormonal control of microtubules.' H. F...

...discussion leader): (Speaker to be announced), "Multiple estradiol-sensitive effector pathways in regulation of hormone-responsive breast cancer growth'; D. A. Sirbasku, "Estromedins'; J. H. Clark, "Estrogen and antiestrogen action.' Submissions...

...Predictive value of animal models'; Anthony Ford-Hutchinson, "Metabolites of arachidonic acid: Messengers of inflammatory responses'; Steven Abramson, "The role of the neutrophil'; James S. Goodwin, "The modulation of immune responses by non-steroidal anti-inflammatory drugs'; Donald T. Walz, "Disease modifying drugs'; Leon Sokoloff, "Is...

...Waldeck, session chairperson). This session will include recent and important developments. Subjects to be announced.

Membrane Lipid Metabolism

Kimball Union Academy

Christian R. H. Raetz, chairperson; W. Virgil Brown, vice chairperson

...

...in model membranes: Peter Cullis, "Modeling of biological membranes'; Graham Shipley, "Structure and interaction in membrane lipid bilayers'; Thomas Thompson, "Organization of glycosphingolipids in phosphatidylcholine bilayers.' Reconstitution of functional membrane proteins into model bilayers: Robert Fillingame, "Proton translocating ATPase of *Escherichia coli*'; Ronald Kaback, "The lac carrier protein: From membrane to molecule'; H. Gobind Khorana, "Light transducing retinal-based pigments.'

21 June. Molecular biology of membrane lipid synthesis in bacteria and yeast: William Dowhan, "In vitro synthesis and membrane association of lipid biosynthetic enzymes'; Eugene Kennedy, "Osmotic regulation and the biosynthesis of membrane-derived oligosaccharides'; Susan Henry, "Genetic regulation of phospholipid synthesis in yeast.' Biogenesis of bacterial membrane lipoproteins and lipopolysaccharides: Henry Wu, "Post-translational modification of pro-lipoprotein in *E. coli*'; Shoji Mizushima, "Biogenesis of membrane lipoproteins in *E. coli*'; Ernst Rietschel, "Structure and conformation of lipid A'; Kuni Takayama, "Structure...

...and Kuni Takayama, "Mitogenic function of lipid A precursors.'

22 June. Secretion and targeting of membrane proteins in simple organisms: Peter Model, "Localization of filamentous phage protein'; Tom Silhavy, "Genetic analysis...

...in *E. coli*'; Randy Dimond, "Secretory mutants in *Dictyostelium discoideum*' Uptake and intracellular translocation of membrane lipids: Sam Kaplan, "Phospholipid metabolism and localization in *Rhodospseudomonas sphaeroides*'; Karel Werts, "Properties and function...

...translocation and metabolism of fluorescent lipid analogs.'

23 June. Biochemistry and somatic cell genetics of membrane sterols: Peter Edwards, "Studies on the synthesis, degradation and mRNA levels of HMGCoA reductase'; Daniel...cells'; Michael Sienensky, "Somatic cell genetic analysis of the regulation of mevalonate biosynthesis.' Function of membrane lipids and proteins in cellular development: Ronald Schnaar, "Immoblized glycolipids support carbohydrate-specific cell adhesion'; William Lennarz, "Glycoprotein synthesis and embryonic development'; Lucy Shapiro, "Role of membrane biosynthesis in *Caulobacter* cell differentiation.'

24 June. Lipid function: Konrad Bloch, "A novel metabolic role for membrane-associated sterols'; Hector DeLuca, "Biochemistry of the vitamin D endocrine system; Robert Farese, "Phosphatidylinositol metabolism...

...Transport Phenomena

Holderness School

Alan Finkelstein, chairperson; Adrian Parsegian, vice chairperson.

18 July. Structure of membrane transport proteins (Jack Kyte, session chairperson): Arthur Karlin, "Functional roles of the subunits of the...

...Initial events in protein translocation across the endoplasmic reticulum; Donald Engelman, "Insertion and folding of membrane proteins"; Rick Hay, "Different mechanisms of protein import into mitochondria."

19 July. Reconstitution of channels...

...lobster nerve reconstituted in planar bilayers.' Posters. Bacterial chemotaxis (Julius Adler, session chairperson): Howard Berg, "Flagellar rotation and its chemotactic control"; Daniel Koshland, "Information processing in chemotaxis"; Robert Macnab, "Processing of...

...in the region of fusion'; Ian Simpson, "Mechanism of glucose transporter translocation to the plasma membrane in response to insulin"; Derek Knight, "The requirements for exocytosis in permeable adrenal medullary cells."

21 July. Epithelia (Joseph Handler, session chairperson): James Wade, "Role of vesicle fusion in regulation of epithelial membrane transport"; Arthur Finn, "Interaction between apical and basolateral membranes in tight epithelia"; Bernd Lindemann, "Transport...1983 to G. E. Pierce, Battelle Memorial Institute, 505 King Avenue, Columbus, Ohio 43201.

Molecular Membrane Biology

Proctor Academy

James E. Rothman, chairperson; Michael S. Brown, vice chairperson.

11-15 July. Membrane structure at high resolution (Donald Engelman, session chairperson): Richard Henderson, Hartmut Michel, Jurg Rosenbusch. Protein...

...translocation (George Palade, session chairperson): Jonathan Beckwith, Gunter Blobel, Bernard Davis, Tom Rapoport. Control of membrane fusion processes (Ari Helenius, session chairperson): V. Adrian Parsegian, William Sly, Warren Strittmatter, Donald Wiley...

...of receptor protein, local insertion of newly synthesized receptors, extracellular and cytoplasmic molecules that alter membrane receptor distribution (Stanley Froehner, session chairperson): Miriam Salpeter; Monroe Cohen; Robert Block. Chemical activation of...

...The role of guanosine triphosphate binding protein in receptor activation: Genetic analysis of cyclase mediated responses, characterization of GTP binding proteins that mediate inhibitory responses, role of GTP in photoreceptor transduction, reconstruction of cyclase-mediated responses (Henry Bourne, session chairperson): Bernard Fung; Eva Neer; David Manning; Michael Schramm. The role of protein phosphorylation in regulation of excitable membranes: Phosphorylation mediated drug and synaptic responses in single Aplysia neurons; the role of protein phosphorylation in rod outer segments, muscarinic receptor...

...activation, EGF receptor activation by antibodies, receptor recycling, somatostatin mediated inhibition, peptide affects on pancreatic membrane phospholipids, peptide mediated changes in adenyl cyclase (Richard Miller, session chairperson): Patricia Hinkle; Kristie King... MacLennan, co-chairperson; Makoto Endo, co-chairperson.

1 August. Methods for measuring intracellular calcium and membrane potentials (John Blinks, session chairperson). T-system and

timing of first events detected by various... session chairperson): Yolande Buchmuller, Stephanie James, David Wyler, Alain Dessain. Characterization and function of parasite antigens (Ruth Nussenzweig, session chairperson): Marcio Pereira, Fidel Zabala, Peter David, Metta Strand, Frank Richards. Immune response of humans to parasites (Eric Ottesen, session chairperson): Daniel Colley, Anthony Butterworth, Andre Capron, Rabi... chairperson): S. Silverstein, D. Fearson, J. Unkelless, E. J. Goetzel. Signals generated in phagocytes following membrane perturbation (J. Gallin, session chairperson): G. Weissmann, D. Romeo, P. D. Lew, R. Snyderman. The... Bogorad, "Chloroplast genes"; G. A. van Arkel, "Cyanobacterial transformation systems"; Gregory Clark, "Regulation of photosynthetic membrane synthesis by oxygen in Rhodospseudomonas capsulata." Photosynthesis II--Nuclear genes regulating chloroplast functions (Bill Taylor... Stroud, "Acetylcholine receptor structure"; George Hess, "Acetylcholine receptor chemistry"; Michael Garavito, "3-D crystals of membrane proteins." Transducing proteins: Muscle (David Trentham session chairperson): William Cook, "High-resolution calmodulin structure"; Ralph...
... chairperson.

15 August. The transferrin receptor and iron transport (Paul Seligman, session chairperson): Howard Sussman, "Isolation and structure of the transferrin receptor"; Ian Trowbridge, "Regulation of the transferrin receptor in relation...

... happenings'; Marshall Edgell, "The globin genes"; Allan Wilson, "Globin gene evolution."

16 August. Red cell membrane skeletal proteins (Vincent Marchesi, session chairperson): David Speicher, "The structure and function of human erythrocyte spectrin"; Vann Bennett, "Red cell membrane skeletal protein analogues in nonerythroid cells." Gene regulation, expression and processing (Vernon Ingram session chairperson...

... chromatin."

17 August. Pathophysiology of red blood cell membranes (Stephen Shohet, session chairperson): Jiri Palek, "Membrane skeletal defects in hereditary spherocytosis and elliptocytosis"; Marguerite M. B. Kay, "Changes in membrane proteins with red cell ageing"; Russell Howard, "Interactions of the red cell and malarial parasites..."

... Colby-Sawyer College (S)

Murugan Malaiyandi, chairperson; Srinivasa Sourirajan, vice chairperson.

11 July. Interactions at membrane-solution interfaces (A. Zelman, discussion leader): S. Sourirajan, "The surface force-pore flow model for RO and UF separations"; L. Zeman, "Anatomy of an UF membrane and parameters affecting performance." Mechanism of transport in RO (P. Blais, discussion leader): W. Pusch, "Membrane structure and water structure in RO membranes"; A. Zelman, "Precision characterization of RO"; J. K...

... RO, UF membranes." Principles of membrane fouling (W. G. Light, discussion leader): R. Probst, "Colloidal membrane fouling in RO systems"; H. Blanch, "Hollow fiber bioreactors for bacterial cell cultures."

14 July. Membrane structure and fabrication (L. Zeman, discussion leader): R. E. Kesting, "Evolution of ionomeric dry RO membranes"; S. Krause, "Polymer solution thermodynamics and application to membrane equilibria." Membrane structure and fabrication (T. Matsuura, discussion leader): A. Allegrissa "Composite membranes: Effects of manufacturing variables on membrane properties"; R. Benson and D. J. Lyman, "New developments in block copolymer membranes."

15 July...
... Michael S., discussion leader): Stuart Builder, "Purification of proteins

from genetically engineered organisms'; Allen Zelman, "The membrane pouch"; Bo Mattiasson, "Ultrafiltration affinity purification"; Eugene Sulkowski, "Purification of proteins by chromatography: Hydrophobic interaction...'

...high-performance liquid chromatography: Multigram scale laboratory separations and large-scale process separations.'

18 August. Extraction (Lanny Robbins, discussion leader): Goran Schill, "Chromatographic and extractive separations of organic compounds by ion pair technique"; Henry Sawistowski, "Mass transfer with interfacial reaction in solvent extraction"; Carl Hansen, "Aspects of the application of solvent extraction to the separation and purification of nonferrous metals.'

19 August. Absorption and distillation (Ralph Weiland... observation of ionospheric and magnetospheric motions.'

16 June. (D. Rees, discussion leader): R. Roble, "Thermospheric response to solar and magnetospheric inputs"; J. Luhmann, "Mesospheric motions and correlated aurora"; H. Volland, "Atmospheric...'

...chemical releases'; S. Shawhan, "Active wave and particle perturbations of the ionosphere.'

Spectroscopy of Matrix-Isolated Species

Colby-Sawyer College (S)

Lester Andrews, chairperson; Martin Moskovits, vice chairperson.

18 July. Vladimir...

...harnessed to provide useful spectroscopic information on radical ions'; Orville L. Chapman, "Applications of matrix isolation to problems in organic chemistry.'

19 July. Dieter Gruen, "What's metallic about metal diatomics"; Derek M. Lindsay, "ESR of matrix isolated metal clusters." Robert Hauge, "Matrix isolation studies of photoassisted insertion of M and M₂ species into C-H, C-F, and...'

...Ogden, "High temperature inorganic molecules in matrices.'

20 July. Paul Schatz, "The study of matrix isolated species using magnetic circular dichroism"; Roger Grinter, "MCD of matrix-isolated atoms and molecules." Dieter M. Kolb, "Photoelectron spectroscopy and synchrotron radiation absorption studies of matrix isolated metal atoms and clusters"; N. Schwenter, "Vacuum ultraviolet spectroscopy of matrix-isolated molecules.'

21 July. Henri Dubost, "Dynamics of vibrational excitations in matrix isolated molecules"; Eric Weitz, "Vibrational energy transfer and relaxation processes in matrix-isolated CH₃F." George C. Pimentel, "Cool it, baby.'

22 July. Hs. H. Gunt hard, "New techniques and...'

...Huber, "Interactive data analysis: Strategy and methods." (William G. Hunter, session chairperson): Andre I. Khuri, "Response surface designs for multiple response systems.'

5 August. (Agnes M. Herzberg, session chairperson): Paul A. Tukey, "Graphical methods for data...'

...proteins, proteoglycans) I (Bjorn R. Olsen, session chairperson): Klaus Kuhn, "Interstitial collagens"; Rupert Timpl, "Basement membrane collagen, intimacollagen and laminin." Structure of extracellular matrix components (collagens, adhesion proteins, proteoglycans) II (George...'

...John McDonald, "Fibronectin's role in collagen organization and deposition by fibroblasts"; Heinz Furthmayr, "Basement membrane structure and assembly"; Erkki Ruoslahti, "Attachment of cells to extracellular matrix." Degradation of extracellular matrix...leader): P. M. Scott, C. W. Thorpe; S. Swanson.

15 June. Analytical methods--mass spectral, immunoassay and other detection methods (G. Bennett, discussion leader): F. S. Chu; J. A. Sphon and...

17/3, K/67 (Item 1 from file: 444)
DI ALOG(R) File 444: New England Journal of Med.
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Weekly Clinicopathological Exercises: Case 33-1993: A 50-Year-Old Man With Onset Of Fever And Diarrhea In Morocco (Case Records of the Massachusetts General Hospital)

Blumberg, Richard S.; Compton, Carolyn C.
The New England Journal of Medicine
Aug 19, 1993; 329 (8), pp 561-568
LINE COUNT: 00609 WORD COUNT: 08415

TEXT

...TABLE OMITTED** *Figure 1.-Film from the Upper Gastrointestinal and Small-Bowel Series, Demonstrating Normal Motility and a Normal Fold Pattern, without Evidence of a Stricture, Mass, Ulcer, or Fistula *.
**FIGURE...

...negative; cimetidine was begun, with a slight decrease in abdominal discomfort. The patient had received immunizations against tetanus, typhoid, and yellow fever; antimalarial prophylaxis was not required for his area of...serologic test for syphilis were negative. Skin tests with tuberculin (PPD, 5 TU) and mumps antigen were negative, and a skin test with candida antigen was positive at 48 hours. Two stool cultures for enteric pathogens were negative at 48...

...mass. An upper gastrointestinal series and small-bowel follow-through study (Fig. 1) reveal normal mucosal folds in the small bowel, a normal transit time, and no evidence of a mass...

...States have consistently found that systemic or localized infections, collagen vascular diseases, and neoplasms were responsible for the fever in 70 to 90 percent of these cases (Ref. 1). Granulomatous diseases...tract also rule out several intestinal parasitic infections that may cause chronic noninflammatory diarrhea in immunocompetent persons. These infections include isosporiasis, giardiasis, and, less commonly, cryptosporidiosis. Also, systemic symptoms are uncommon...

...infection, which might in part explain this patient's clinical syndrome, is a disease of immunocompromised persons (Ref. 20...

...associated with crowding in impoverished communities. The tick-borne form must be considered, since the responsible soft tick is endemic to northern Africa, including Morocco. A variety of animal hosts, principally rodents, maintain the reservoir of infection. The responsible organism is transmitted to human beings from the saliva of the tick during a blood...suffusion. Apyrexia of one to five days' duration occurs subsequently and is followed by an immune phase, which usually lasts one day but may last one month, during which serum antibodies...

...may be less well adapted to human beings, since Sal. paratyphi type B has been isolated from tortoises in Morocco (Ref. 23). Most commonly, however, tortoises are the vehicle for the...

...of salmonella can occasionally cause an illness resembling enteric fever, but the hosts are usually immunocompromised.

...

...the negative cultures and the tempo of the course. Furthermore, although this patient had been immunized against typhoid fever, the immunization is not completely effective...children and in adults with cirrhosis, diabetes mellitus, sickle cell anemia, cancer, and the acquired immunodeficiency syndrome (Ref. 35). A prolonged illness would be extremely unusual in a patient with shigellosis...

...and unpasteurized milk products and possible exposure to contaminated water while he was camping. In immunocompetent persons *Campylobacter jejuni* causes a self-limited enteritis that lasts less than one week in... disease, usually an iron-overload disorder. Twenty percent of persons with systemic spread are, however, immunocompetent. Asymptomatic blood donors can even transmit *Y. enterocolitica* infection, indicating the invasiveness of this organism in immunocompetent hosts (Ref. 46). *Yersinia* infection is thus consistent with the epidemiologic pattern, clinical course, and...

...Dr. Blumberg: Since *Yersinia* has specific growth requirements, routine culture of stool specimens successfully isolates the organism in only about 60 percent of the cases and often not by 48...

CITED REFERENCES

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Medical Progress: Bacterial And Protozoal Gastroenteritis (Review Article)

Guerrant, Richard L.; Bobak, David A.
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LINE COUNT: 00741 WORD COUNT: 10238

TEXT

...the leading cause of childhood death, and in some parts of the world they are responsible for more years of potential life lost than all other causes combined (Ref. 2). Most...

...infectious doses are relatively low, according to studies in human volunteers. An infectious dose of *Vibrio cholerae*, *Esch. coli*, or

salmonella usually requires the ingestion of 10⁵ to 10⁶ adenoviruses, and coxsackieviruses have also been noted in cases of nosocomial diarrhea in pediatric and immunocompromised patients (Ref. 26, 27). *Candida albicans*, found in one third of the cases of nosocomial... cause of diarrhea (Ref. 29). Nosocomial diarrhea associated with *C. albicans* is especially prevalent in immunocompromised or malnourished patients (Ref. 30, 31) and in patients receiving antibiotic or antineoplastic drugs (Ref...).

...*C. difficile* and its cytotoxins is increasingly available. Distinguishing different strains of *C. difficile* by immunoblotting, restriction-endonuclease digestion, or examination of antibiotic-sensitivity patterns further demonstrates its spread in hospitals...

...infection.

Traveler's Diarrhea

Much like the children in developing areas in the tropics, the immunologically naive traveler to these areas is susceptible to the enteric pathogens that heavily contaminate the... Other increasingly recognized problems include fatal *V. vulnificus* infections in patients with liver disease who eat raw oysters and unexplained chronic diarrhea after...

...destroyed by the parasite). Ingestion of inadequately cooked seafood should prompt consideration of infections with vibrio or Norwalk-like viruses. The use of antibiotics should be stopped if possible, and cytotoxigenic...

...with *Staph. aureus*, *B. cereus* (incubation periods, <6 hr), *C. perfringens*, enterotoxigenic *Esch. coli* (ETEC), vibrio, salmonella, campylobacter, shigella, or enteroinvasive *Esch. coli* (EIEC). Consider saving *Esch. coli* samples for serotyping... persist or suggest an appendicitis-like syndrome, culture for *Y. enterocolitica* with cold enrichment. In immunocompromised hosts, a wide range of viral (cytomegalovirus, herpes simplex virus, coxsackievirus, or rotavirus), bacterial (salmonella...).

...so a reliable leukocyte marker would provide a better screening test *.

** FIGURE OMITTED **

Diarrhea in Immunocompromised Patients

With the increasing frequency of the acquired immunodeficiency syndrome (AIDS) and immunosuppressive chemotherapy, diarrhea in immunocompromised patients presents a growing challenge. The impressive intestinal mucosal immune system -- also called "gut-associated lymphoid tissue" -- that protects our 400 m² of mucosal surface is composed of three components: Peyer's patches, lamina propria lymphocytes, and intraepithelial lymphocytes (Fig. 2) (Ref. 71, 72). In addition to their critical role in the uptake of antigen, (Ref. 73) M (microfold) cells also appear to be a route by which bacteria can...

...such as *cryptosporidium* can be taken up (Ref. 76). Specific enteric infections associated with humoral immune defects include giardiasis in patients who lack IgA and IgM and have nodular lymphoid hyperplasia...

...selective deficiency of secretory component has been associated with intestinal candidiasis (Ref. 80). Finally, certain mucosal pathogens may enhance their pathogenicity by producing IgA proteases (Ref. 81, 82).

*Figure 2.- The Intestinal Mucosal Immune System In the Peyer's patches, microfold (M) cells sample foreign antigen (Ag) from the gut lumen, and macrophages (MP) and dendritic cells (D) (which express major histocompatibility complex Class II MHC-II antigen) process this

antigen for presentation to CD4+ (T4) lymphocytes. The T4 lymphocytes produce cytokines (such as interleukin-2...

...lumen as secretory IgA (sIgA). Interferon gamma also increases the expression of MHC-II by mucosal epithelial cells. In the adjacent mucosal epithelium, 1 in every 6 to 10 cells is an intraepithelial CD8+ (T8) or gamma/delta lymphocyte that may be important in cellular immune responses to enteric pathogens and antigens (Ref. 71, 72). The term "gut-associated lymphoid tissue" is reserved by some to refer...

...Patients with impaired cellular immunity or receiving steroids are at increased risk for life-threatening hyperinfection syndrome with *Strongyloides stercoralis*...

...having strongyloides infections. It is thus important to consider this potentially dangerous helminthic parasite in immunocompromised patients and use fecal and serologic diagnostic studies when indicated (Ref. 94, 95...

...with diarrhea of one month's duration were found to be seropositive for the human immunodeficiency virus, and 40 percent of patients with AIDS presented with persistent diarrhea (Ref. 98). Antony... a veterinary pathogen, *cryptosporidium* was described in only seven cases in humans (five of them immunocompromised) from 1976 to 1982, when severe, life-threatening diarrhea in patients with AIDS brought cryptosporidiosis...

...as an important waterborne cause of self-limited, subacute, watery diarrhea (Ref. 109-111) in immunocompetent patients in developing and developed countries (Ref. 112-114). Cryptosporidial diarrhea may be prolonged, especially...

...with eosinophilia and Charcot-Leyden crystals that are uncharacteristic of protozoa. Infection with *I. belli* responds to trimethoprim-sulfamethoxazole or sulfadoxine-pyrimethamine therapy; repeated or suppressive courses may be required in...

...granules, and thylakoid-like wavy lamellar organelles (Ref. 124). This organism has been found in immunocompetent patients as well as those with AIDS who have watery, noninflammatory diarrhea, often associated with recent travel in the Caribbean (Ref. 124-126). This organism lacks a membrane-bound nucleus and does not stain well with auramine or with Gomori's, Gram's... available, serologic surveys suggest an association of Enceph. cuniculi antibody with tropical areas (Ref. 132). Isolated cases have improved after treatment with pyrimethamine, metronidazole, or trimethoprim-sulfamethoxazole; effective therapy for microsporidiosis...

...contribute to diarrhea, malnutrition, or extraintestinal nosocomial infections (Ref. 46, 48, 51, 144). Impaired intestinal motility leads to increased susceptibility to invasive pathogens, as well as impairment of normal absorption of water and electrolytes (Ref. 145-147). Active immunity, as well as passive protection by breast-milk antibody, lactoferrin, lysozyme, antibody, and other factors...

...toxins or heat-stable toxins produced by other organisms, such as *Klebsiella*, *Citrobacter*, *Salmonella*, *Campylobacter*, *Vibrio*, and *Yersinia*, in the pathogenesis of diarrhea with these organisms remain unclear (Ref. 165-168...

...and two recently described *Esch. coli* products cause fluid secretion in animal models or electrogenic responses in Ussing chambers (Ref. 169-175). Cytotoxic or neurotoxic products of enteric pathogens include

shigella disease. Two-to-seven-nanometer surface fibrillae or fimbriae of enterotoxigenic Esch. coli (colonization-factor antigens I to V) are critical to the capacity of the organism to colonize the small...

...its duration and severity and promptly initiate appropriate replacement of fluid. Fortunately, most noninflammatory illnesses respond to simple rehydration therapy. If an illness has persisted for several days or has caused...

...those with AIDS. Specific clues may suggest inflammatory diarrhea, yersinia, enterohemorrhagic Esch. coli, Ent. histolytica, vibrio, Cl. difficile, giardia, cryptosporidium, enterotoxigenic Esch. coli, food poisoning, or sexually transmitted or other pathogens (Fig. 1). In immunocompromised patients endoscopy and biopsy may be indicated if the illness persists and routine stool culture mucosal nutrient in the small bowel, analogous to short-chain fatty acids in the colon), (Ref ...

...effective, absorbable antimicrobial agent can reduce the duration of symptoms in shigella, enterotoxigenic Esch. coli, vibrio, and sometimes Camp. jejuni infections. The increasing resistance of enteric pathogens to commonly used antimicrobial...

...Ref. 219). For example, 44 percent of enterotoxigenic Esch. coli and 79 percent of shigella isolated from U.S. troops in Saudi Arabia in 1990 were resistant to trimethoprim-sulfamethoxazole (Ref...

...Ref. 111,226). Finally, greater understanding of virulence traits such as adhesins, toxins, and Vi antigen is leading to new developments in vaccines against typhoid fever, cholera, and enterotoxigenic Esch. coli...

...understanding of the traits of microbial virulence (such as adhesins, toxins, and invasins) and host responses have reached the molecular level and now open exciting biochemical, immunologic, and pharmacologic avenues for improved control of the increasingly

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Fever, Bullae, Erythema, And Edema Of The Leg After Wading In Brackish Water (Case Records of the Massachusetts General Hospital)

Graven, Donald E.; Gooze, Paul B.
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LINE COUNT: 00691 WORD COUNT: 09541

TEXT

...and warmth were palpated over the lateral aspect of the anterior compartment, believed suggestive of subcutaneous edema; no signs of deep venous thrombosis were found. The urine was normal. The hematocrit...

...was reported to contain colonies of gram-negative rods that were later identified as a vibrio species. On the eighth hospital day the patient was transferred to this hospital...

...disease, receipt of transfusions, chest pain, diabetes mellitus, stroke, recent insect bite, or receipt of immunosuppressive medications; he had been free of claudication since the vascular surgical procedure... on a Gram stain of material aspirated from the site of the cellulitis, and the isolation of a vibrio species from a blood culture... presented with cellulitis and sepsis. Cellulitis is an acute spreading infection of the epidermis and subcutaneous tissues (Ref. 1). Trauma or a break in the skin allows penetration of the pathogen...

...hobbies, diet, travel history, and underlying disease, a history of trauma, and the presence of immunosuppression. The site of the cellulitis, the presence of other tissue changes, and the response to antimicrobial therapy may provide additional information. Other soft-tissue infections, such as abscess formation...

...streptococci. Bullous impetigo begins as vesicles that evolve into flaccid bullae, which are a cutaneous response to a staphylococcal toxin (Ref. 1). This disease is most common in newborns and young children. Staphylococci are regularly isolated from the skin lesions, and there is usually a prompt response to the administration of an antistaphylococcal antibiotic. Staphylococcal scalded skin syndrome (SSSS) should be suspected...

...usually not observed on a Gram stain of the drainage material, but it may be isolated by culture or biopsy at the advancing edge of the infection, which responds to treatment with penicillin G. Aquarium workers and fishermen have experienced the development of a...

...Anaerobic cellulitis due to clostridial species usually occurs in patients who have devitalized subcutaneous tissues (Ref. 1). Clostridium perfringens and other clostridial species thrive in dirty or inadequately debrided... The clinical differentiation of infections involving the skin and subcutaneous tissues from those involving the fascia and skeletal muscle may be difficult (Ref. 1). Gas...

...setting. Escherichia coli, klebsiella, enterobacter, and Pseudomonas aeruginosa may cause cellulitis in patients who are immunocompromised or granulocytopenic or have a thermal injury (Ref. 1,16). Patients with bacteremia due to...

...The family Vibrionaceae contains the genera aeromonas, pleisiomonas, and vibrio. Aeromonas and pleisiomonas are nonhalophilic (non-salt loving) gram-negative bacilli with predominant polar flagella (Ref. 17,18). Aeromonas may be found in fresh water, estuaries, and soil (Ref. 17... gas gangrene, and sepsis due to A. hydrophila have been reported in patients who are immunologically competent (Ref. 13,14). Bacteremia, sepsis, and metastatic lesions involving skin and muscle, however, are more likely to develop in immunocompromised patients (Ref. 13). The

absence of a contaminated wound and gas in the tissues and the isolation of a halophilic species of vibrio from the patient's blood exclude the diagnosis of aeromonas infection. Plesiomonas shigelloides was previously...

...vibrios, plesiomonas does not survive well in seawater, (Ref. 19) and most of the human isolates of plesiomonas have been from stool cultures of patients with diarrhea. Diarrhea due to P...

...We are told that this patient had bacteremia and sepsis due to a vibrio species. Several reviews and editorials have focused on this diverse and interesting group of organisms (Table 1) (Ref. 18, 26-33). Vibrios are actively motile, curved, gram-negative rod-shaped bacteria (Ref. 18). In contrast to the Enterobacteriaceae, vibrios are oxidase-positive, have polar flagella, and are halophilic (salt-loving). Proper culture and isolation of vibrio species have been described in detail by Farmer et al (Ref. 18). Vibrios are among ...Vibrio cholerae Group 01 causes cholera, a disease characterized by a profuse, watery diarrhea that can...

...Non-group 01 V. cholerae has been isolated from patients with gastroenteritis in the United States. The organism may be acquired by eating...

...wound and soft-tissue infections ascribed to V. parahaemolyticus have now been attributed to V. vulnificus (Ref. 27...

...V. alginolyticus was first isolated in 1973 from patients with soft-tissue infections attributed to other vibrios (Ref. 51). Since...

...male patients who had prior exposure to seawater (Ref. 26, 27). Unfortunately, many of the isolates come from wounds, cutaneous ulcers, burns, or the external ear canal, making a clear cause-and-effect association and the response to antibiotics difficult to assess. Although bacteremia may occur in immunosuppressed persons or patients with thermal injury, this species of vibrio would be an unlikely cause of this patient's illness...

...Ref. 52). V. damsela is known to cause skin lesions in fish and has been isolated from human wounds exposed to salt water (Ref. 52). V. mimicus has been isolated most commonly from stool samples of patients with gastroenteritis who had ingested raw oysters (Ref. 53). Two patients have had V. mimicus isolated from the external ear canal after exposure to seawater. These three vibrio species have low virulence and are an unlikely cause of this patient's illness. V. vulnificus is a lactose-fermenting, non-cholera vibrio that was first described in 1979 (Ref. 26, 27, 54). Previously, V. vulnificus was known as Beneckea vulnifica, a halophilic, lactose-positive marine vibrio. V. vulnificus may be present in the sea or estuaries from the Gulf of Mexico to Cape...

...the illness from April to October in the Gulf Coast areas. Like other vibrios V. vulnificus is concentrated in filter feeders, such as oysters. Studies have found that more than 50 percent of the oyster lots sampled in the United States contain V. vulnificus (Ref. 57). This organism is distinct from other vibrios because of its virulence, which may account for the high morbidity and mortality of infections with V. vulnificus (Ref. 58, 59). The presence of a polysaccharide capsule may increase the organism's resistance...

...Ref. 62) may explain the occurrence of septicemia in patients with hemochromatosis (Ref. 54). V. vulnificus also produces a cytolysin-hemolysin, (Ref. 63) collagenase, (Ref. 64) phospholipases, (Ref.

65) and a...

...Two distinct clinical syndromes have been attributed to *V. vulnificus*. The first is primary bacteremia with secondary seeding of the soft tissues (Ref. 26,27...

...men with no history of eating raw oysters (Ref. 67). Wound infections caused by *V. vulnificus* range from mild to rapidly progressive cellulitis with necrosis that mimics gas gangrene (Ref. 26...

...activity in mice. This patient received penicillin and imipenem and appeared to have a clinical response. Although we have little in vitro data and no in vivo data on the efficacy of imipenem against *V. vulnificus*, it was reported to have activity against 38 isolates of the genus vibrio (Ref. 77). In addition, some of the quinolone antibiotics, such as norfloxacin, appear to be...

...treated with tetracycline and gentamicin. The duration of the antibiotic therapy depends on the clinical response. It is likely that surgical debridement and good wound care were also needed to facilitate...
...factors in the pathogenesis of infection. In reviewing the literature on infections due to *V. vulnificus* one is struck by the high frequency of infection in elderly ...that more infections with this organism have not been reported. Perhaps the virulence of *V. vulnificus* isolates varies or a normal immune system may provide sufficient protection against infection. Recent data have suggested that patients with alcoholic...

...Prevention of infection due to *V. vulnificus* is of paramount importance. All patients, particularly those who are elderly or have underlying disease...

...and necrosis as well as the documented hypotension and thrombocytopenia suggest infection caused by *V. vulnificus*. I suspect that he had a wound infection with cellulitis, bacteremia, and sepsis caused by *V. vulnificus*. The report received was probably that of the species of vibrio isolated and perhaps its antibiotic-sensitivity pattern
...

...variety of infectious agents but thought that the clinical picture was entirely consistent with *V. vulnificus* infection. They believed that this diagnosis was confirmed by bacteriologic culture...

...Clinical Diagnosis

Vibrio vulnificus cellulitis, with bacteremia...

...Dr. Donald E. Graven's Diagnoses

Cellulitis, bacteremia, and sepsis caused by *Vibrio vulnificus*.

? Fasciitis.

? Myositis...

...his contact with sea-water, the information that his blood cultures were positive for a vibrio species, and his bullous skin lesions we believed that the diagnosis was *V. vulnificus* cellulitis with bacteremia. The isolate was referred to the Public Health Department State Laboratory. The diagnostic report received was the identification of the isolate as *V. vulnificus*.

Infections with *V. vulnificus* occur most commonly in persons exposed to seawater along the Gulf of Mexico and the...

...skin and fascia. Extensive subepidermal bullae, marked superficial dermal edema, a massive infiltrate throughout the subcutaneous fat and dermis, and numerous thromboses in subcutaneous arteries and

veins were evident on low-power examination (Fig. 1). The subepidermal bullae were...

...of the formation of bullae as well as the numerous vascular thromboses. Examination of the subcutaneous fat revealed extensive hemorrhage and edema, with many neutrophils and areas of widespread liquefactive necrosis...

...Figure 3.-Edema and Infiltrate Composed Principally of Neutrophils (x 250) *. **FIGURE OMITTED** *Figure 4.-Subcutaneous Artery Containing a Recent, Organizing Thrombus (x 70) *. **FIGURE OMITTED** *Figure 5.-Fibrinoid Necrosis of...

...The changes illustrated are characteristic of *V. vulnificus* soft-tissue infections. Descriptions of the histopathologic changes due to either a primary wound infection or septicemia caused by *V. vulnificus* have been similar to those in this case (Ref. 80-83). In most of the...

...massive numbers of gram-negative organisms scattered through the tissues, including the bullae, dermis, and subcutaneous fat and around vessels. The absence of demonstrable organisms in this case can be explained...

...cause a gangrenous cellulitis because of their proclivity to grow within the vessels of the subcutaneous tissue. Cutaneous anthrax, clostridial cellulitis, and *M. ulcerans* are toxin-producing infections that are typically associated with extensive ischemic necrosis, large numbers of organisms, and little inflammatory response. Ecthyma gangrenosum caused by *Pseudomonas*, likewise often elicits little inflammatory response, with many organisms visible in and about blood vessels... case. The culture results and the tissue alterations in this case are diagnostic of *V. vulnificus* gangrenous cellulitis...

...*Vulnificus*, Latin for "wounding," is a good name for this vibrio, which may cause extensive soft-tissue destruction. Other marine halophilic vibrios, including *V. alginolyticus*, *V.*...

...cause similar soft-tissue infections or septicemias in human beings (Ref. 26,30,32). *V. vulnificus*, however, is the most common of these species involved. As mentioned, *V. vulnificus* produces cytotoxins, proteases, phospholipases, and collagenases (Ref. 29). The cytotoxin causes death of lipocytes, endothelial...

...the millions of persons who depend on the ocean for nourishment, vocation, and recreation. Although vibrio species have been shown to be pathogenic in eels, (Ref. 88) damselfish, (Ref. 89) and salmon, (Ref. 90) the biotype of *V. vulnificus*, which causes infection in human beings, has not yet been demonstrated to be a common cause of infection in marine animals (Ref. 91). The virulence of *V. vulnificus* is related to encapsulation (Ref. 60); other inherent determinants of virulence are unknown. Host factors...

...apparently healthy persons. Perhaps a complement deficiency, either hereditary or acquired, predisposes to serious *V. vulnificus* infection. Such a deficiency has been described in patients with other infections caused by encapsulated...

...It is important to recognize that the marine noncholeraogenic vibrios, including *V. vulnificus*, may be found throughout the marine environment and that their presence does not appear to...

...Cultures of all the samples of blood and surgical samples were negative for growth of vibrio species at this hospital. He received a

three-week course of tetracycline plus gentamicin and... Anatomical
Diagnosis

Cellulitis and bacteremia due to *Vibrio vulnificus*.

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Set	Items	Description
S1	38	E1- E3
S2	24	S1 AND VI BRI O
S3	12	RD (unique items)
S4	64	E1- E3
S5	46	S4 AND VI BRI O
S6	31	RD (unique items)
S7	230	E1- E3
S8	23	S7 AND VI BRI O
S9	11	RD (unique items)
S10	484542	(FLAGEL? OR VI BRI O OR OMCP6 OR (MO6-24/O) OR ATCC29307)
S11	202761	S10 AND (VI BRI O OR VULNI FI CUS)
S12	62065	S11 AND (ADJUV? OR IMMUN? OR ANTI G? OR RESPON?)
S13	10367	S12 AND (MUCCOSAL OR MUCCOUS OR NASAL OR INTRAMUS? OR SUBCUT- A? OR MEMBRANE)

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S14	2840	S13	AND ((WHOLE(W CELL) OR (EXTRACT?) OR (I SOLAT?))
S15	1250	S14	AND (VI BRI O AND (I MMUNE OR ANTI GEN))
S16	102	S15	AND (MOTI L? OR FLAGEL?)
S17	69	RD	(uni que i t ems)